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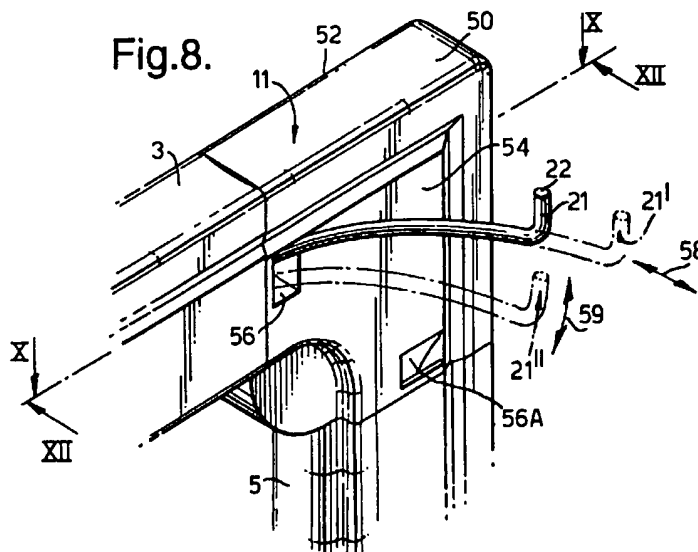
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(54) **Corner assembly for a frame**

(57) A nodal assembly (11) for connecting at least two adjacent frame members (3,5) of a perimeter frame (1), the nodal assembly comprising a central portion (50) having parallel first (52) and second (54) sides and an opening (56A) in the second side, a first leg extending from the central portion in a first direction parallel to the first side and having a cavity within it in communication with the opening, a second leg extending from the central portion in a second direction different from the

first direction but also parallel to the first side, and a retainer (21) slidably received in the cavity and movable between a retracted position substantially within the central portion and the first leg and an extended position in which the retainer extends substantially outwardly of the opening in the second side of the central portion and away from the second side.



Description

[0001] This invention relates to a nodal assembly, particularly a corner assembly, for a peripheral frame which can be removably mounted on a architectural opening. This invention quite particularly relates to a corner assembly for the frame of an insect screen for a window opening.

[0002] Corner assemblies of frames that can be used to removably mount framed insect screens and other sheet-line panels on windows and doors are known, for example, from US patent 5,431,211 and UK patent application GB 2,236,134A. US patent 5,431,211, in particular, describes an insect screen that has a frame with a corner assembly having a retaining protrusion which is: i) slidably held within the corner assembly and ii) can be slid outwardly of a longitudinal side of the corner assembly and into a suitable recess provided in the window frame to hold the screen on the window. However, the windows and doors, to which such a corner assembly has been attached, have had to be specially provided with suitable recesses which could accept and hold the retaining protrusion of the corner assembly.

[0003] In accordance with this invention, a nodal assembly, particularly a corner assembly, is provided for collecting at least two adjacent frame members of a perimeter frame, the nodal element comprising:

- a central portion having parallel first and second sides and an opening in the second side;
- a first leg extending from the central portion in a first direction parallel to the first side and having a cavity within it in communication with the opening;
- a second leg extending from the central portion in a second direction different from the first direction but also parallel to the first side; and
- a retainer slidably received in the cavity and movable between a retracted position substantially within the central portion and the first leg and an extended position in which the retainer extends substantially outwardly of the opening in the second side of the central portion and away from the second side.

[0004] In accordance with one aspect of the nodal assembly of the invention: the first and second sides of the central portion are laterally opposite sides, preferably front and rear sides; the cavity in the first leg is substantially parallel to the first leg; one end of the cavity is in communication with one end of a channel in the central portion; and the other end of the channel is in communication with the opening in the central portion.

[0005] In accordance with another aspect of the nodal assembly of the invention: the retainer comprises:

- an elongated part at one end, preferably a front end part, which is slidably received in the cavity in the first leg and in the channel, if present, and which can be moved outwardly, preferably rearwardly, of

the second side of the central portion through the opening in the second side; and

- a hook-shaped part at its other end, preferably a rear end part, which is located outwardly, preferably rearwardly, of the second side of the central portion; the retainer, in its retracted position, having a central part substantially within the cavity in the first leg and in its extended position, having its central part extending outwardly of the cavity through the opening in the central portion and away from, preferably rearwardly of, the second side of the central portion.

[0006] Also in accordance with this invention, a perimeter frame is provided comprising:

- a plurality of elongate frame members;
- a plurality of the nodal assemblies described above, each nodal assembly having first and second legs engaging the ends of two adjacent frame members to form the perimeter frame and a retainer; and optionally
- a sheet-like panel attached to the perimeter frame to cover an area defined by the perimeter frame; each of the retainers being adapted to engage a window opening having a contour corresponding to the perimeter frame so that the sheet-like panel, if present, covers the window opening.

[0007] Further aspects of the invention will be apparent from the detailed description below of particular embodiments and the drawings thereof, in which:

- Figure 1 is a perspective view of the rear of one embodiment of a perimeter frame for a sheet-like panel, having four corner assemblies of this invention.
- Figure 2 is a perspective view of the rear of a window frame or jamb having an opening in which the perimeter frame of Figure 1 is installed.
- Figure 3 is a schematic cross-sectional view of the perimeter frame of Figures 1 and 2 installed on a first embodiment of a window frame similar to that in Figure 2, taken along line C-C of Figure 2.
- Figure 4 is a schematic cross-sectional view of the perimeter frame of Figures 1 and 2 installed on a second embodiment of a window frame similar to that in Figure 2, taken along line C-C of figure 2.
- Figures 5, 6 and 7 are schematic cross-sectional views of several steps in the process of installing the perimeter frame on the window frame of Figure 2, taken along line C-C of Figure 2; Figure 7 shows the final mounted position of the perimeter frame on the window frame.
- Figure 8 is an enlarged detail view of a corner assembly "X" of Figure 1, showing several positions of a vertically more flexible, slidable retainer in the corner assembly.

- Figure 9 is an enlarged detail view of another corner assembly "Y" of Figure 1, showing two positions of a vertically less flexible, slidable retainer in the corner assembly.
- Figure 10 is a schematic cross-sectional view in a horizontal plane, taken along line X-X in Figure 8, with the vertically more flexible retainer in a retracted position.
- Figure 11 is a schematic view similar to Figure 10 with the vertically more flexible retainer in an extended position.
- Figure 12 is a schematic cross-sectional view in a vertical plane, taken along line XII-XII in Figures 8 and 10 with the vertically more flexible retainer in a non-deflected position.
- Figure 13 is a schematic view similar to Figure 12 with the vertically more flexible retainer in a downwardly deflected position.
- Figure 14 is an enlarged schematic detail view, similar to Figure 8 and 9, of another embodiment of a corner assembly of this invention, shown as a left-hand bottom corner detail of a perimeter frame.
- Figure 15 is a schematic top plan view of the corner assembly of Figure 14.
- Figure 16 is a schematic partial vertical cross-sectional view through the corner assembly of Figure 14, showing an exploded arrangement of an adjusting device.
- Figure 17 is a perspective view, similar to Figure 1, of the rear of a perimeter frame for a sheet-like panel having four further embodiments of a corner assembly of this invention.
- Figure 18 is a schematic perspective view of components of a corner assembly of Figure 17 in their operative positions but free from the surrounding structure of the corner assembly.
- Figure 19 is a schematic bottom view of the components of Figure 18.

In these Figures, corresponding parts in different embodiments are referred to by the same name and by the same last two reference numerals.

[0008] Figures 1-13 schematically show one embodiment of a rectangular perimeter frame, generally 1, of this invention for an architectural opening, such as a window.

[0009] As best seen in Figure 1, the perimeter frame 1 comprises first, second, third and fourth elongate frame members 3, 5, 7 and 9, the ends of which are connected to each other by first, second, third and fourth, nodal or corner assemblies 11, 13, 15 and 17, respectively, of this invention. A sheet-like panel member 19, such as an insect screen, is attached in a conventional manner to the frame members 3, 5, 7 and 9 to cover an area surrounded by the perimeter frame 1. Extending from the rear of each corner assembly 11, 13, 15 and 17 is a hook-shaped retainer 21, 23, 25 and 27, respectively, each having a hook-shaped first end

part 22, 24, 26 and 28, respectively, which will be described below in relation to Figures 8-13.

[0010] As seen in Figure 2, when the perimeter frame 1 is installed in a window frame, generally 29, the a hook-shaped first end parts 22, 24, 26 and 28 of the retainers 21, 23, 25 and 27 engage the adjacent rear sides of the widow frame 29 to hold the perimeter frame and its sheet-like panel 19 in place over the window opening 30.

[0011] Figure 3 shows a first type of window frame 29A hingedly carrying a pane frame 31A. The window frame 29A has only a shallow thickness 33A which is common to metal window frames. The hinged pane frame 31A can be made of metal, wood or plastic and contains a glass pane 35A. The rear sides of the frame members 3, 5, 7 and 9 (9 not shown in Figure 3) of the perimeter frame 1 of this invention abuts corner assemblies 11, 13, 15 and 17 rest against the front of the window frame 29A, with the hook-shaped end parts 22, 24, 26 and 28 (26 and 28 not shown in Figure 3) of the retainers 21, 23, 25 and 27 (25 and 27 not shown in Figure 3) of the corner assemblies engaging adjacent rear sides of the widow frame 29A to hold the perimeter frame and its sheet-like panel 19 in place over the window opening 30 and also over the glass pane 35A when the hinged frame 31A is closed.

[0012] As seen in Figures 2 and 3, the hook-shaped end part 22, 24, 26 and 28 of each retainer 21, 23, 25 and 27 need only extend rearwardly from the perimeter frame 1 and its corner assembly 11, 13, 15 and 17 by the rearward thickness 33A of the adjacent inner facing side 36A of the Figure 3-type window frame 29A. If the retainers 21, 23, 25 and 27 have sufficiently thin hook-shaped end parts 22, 24, 26 and 28, as is shown in Figure 3, they do not interfere with the closure of the pane frame 31A. With this arrangement, the sheet-like panel 19 in the perimeter frame 1 can remain in position when the pane frame 31A is closed.

[0013] Figure 4 shows a second type of window frame 29B hingedly carrying a pane frame 31B that contains a glass pane 35B. The window frame 29B has a larger thickness 33B than does the window frame 29A of Figure 3. The window frame 29B can be made of wood or plastic, and the hinged pane frame 31B can be made of metal, wood or plastic. The rear sides of the frame members 3, 5, 7 and 9 (9 not shown in Figure 3) of the perimeter frame 1 of this invention and its corner assemblies 11, 13, 15 and 17 rest against the front of the window frame 29B, with the hook-shaped end parts 22, 24, 26 and 28 (26 and 28 not shown in Figure 4) of the retainer hooks 21, 23, 25 and 27 (25 and 27 not shown in Figure 4) of the corner assemblies engaging adjacent rear sides of the widow frame 29B to hold the perimeter frame and its sheet-like panel 19 in place over the window opening 30 and over the glass pane 35B if it is closed.

[0014] As seen in Figure 4, the hook-shaped end parts 22, 24, 26 and 28 of the retainer hooks 21, 23, 25

and 27 extend rearwardly from the perimeter frame 1 and its corner assemblies 11, 13, 15 and 17 by the substantial rearward thickness 33B of the respective adjacent inner facing sides 36B of the Figure 4-type window frame 29A. Thus, the retainers 21, 23, 25 and 27 and the corner assemblies 11, 13, 15 and 17 are preferably constructed in accordance with this invention to hold the perimeter frame 1 in place on the relatively thick window frame 31B of Figure 4, as well as the relatively thin window frame 31A of Figure 3. If the retainers 21, 23, 25 and 27 have sufficiently thin hook-shaped end parts 22, 24, 26 and 28, as is shown in Figure 4, they do not interfere with the closure of the pane frame 31B. With this arrangement, the sheet-like panel 19 in the perimeter frame 1 can remain in position when the pane frame 31B is closed.

[0015] As will be appreciated from the above, the perimeter frame may conveniently be hung on the outside of an inwardly opening window or on the inside of a outwardly opening window.

[0016] The retainers 21, 23, 25 and 27 are preferably made from a relatively strong and durable metal or plastic, especially steel, particularly a conventional spring steel. The upper retainers 21 and 27 can, if desired, be made from a somewhat more flexible material than the lower retainers 23 and 25. However, for ease of stocking retainers 21-27, it may be preferable to use identical upper retainers 21 and 27 and lower retainers 23 and 25 in the perimeter frame 1.

[0017] As also shown in Figures 3 and 4, a spline 41 is preferably provided in a groove 42 formed in the inner facing side of each of the frame members 3, 5, 7 and 9 to hold the sheet-like panel 19 in the perimeter frame 1 of this invention.

[0018] Figures 5, 6 and 7 show the steps for installing the perimeter frame 1 in a window frame 29. Initially, the upper retainers 21 and 27 (27 not shown in Figures 5-7), with their upwardly extending, hook-shaped end parts 22 and 28, are pulled outwardly of their respective upper corner assemblies 11 and 17 by a distance corresponding to the thickness of the frame 29. The upper retainers 21 and 27 are then urged against the upper jamb 43 of the window opening 29 and deflected downwardly to a distance "a" above the bottom of the upper horizontal frame member 3 of the perimeter frame 1 as shown in Figure 5. This downward deflection of retainers 21 and 27 can be obtained as shown by moving the entire perimeter frame 1 upwardly in the direction of arrow 45 against the bottom of the upper jamb 43 of the window frame 29.

[0019] As shown in Figure 6, the lower retainers 23 and 25 (25 not shown in Figures 5-7), with their downwardly extending, hook-shaped end parts 24 and 26, are then pulled outwardly of their respective lower corner assemblies 13 and 15 (if they have not already been so-pulled outwardly). The lower retainers 23 and 25, which are located a distance "b" below the top of the lower horizontal frame member 7 of the perimeter frame

1, are then moved over the lower jamb 44 of the window frame 29 by swinging the perimeter frame 1 rearwardly in the direction of arrow 47.

[0020] When the perimeter frame 1 is thereafter allowed to move downwardly as indicated by arrow 49 in Figure 7, the upper retainers 21 and 27 return to their relaxed positions at a similar distance "b" above the bottom of the upper frame member 3 as the distance "b" that the lower retainers 23 and 25 are below the top of the lower frame member 7. As also seen in Figure 7, the hooked end parts 22, 24, 26 and 28 of the retainers 21, 23, 25 and 27 thereby engage the rear surfaces of the upper and lower jambs 43 and 44 of the window frame 29 to hold the perimeter frame 1 securely in the window opening 30.

[0021] Figures 8-13 show details of two of the corner assemblies 11 and 13 of Figures 1-7. Preferably, the other two corner assemblies 15 and 17 are mirror images of the corner assemblies 11 and 13, respectively.

[0022] As seen in Figure 8, the upper corner assembly 11 has a central portion 50 with parallel front and rear sides 52 and 54. A relatively large opening 56 is provided in the rear side 54 of the central portion 50, through which the relatively vertically more flexible retainer 21 extends and from which its hooked end part 22 extends rearwardly of the central portion. The distance that the retainer 21 and its hook-shaped end part 22 extend rearwardly from the central portion 50 can be varied, and one possible further position is indicated as 21' by dotted lines. In this regard, the retainer 21 can be moved, relative to the opening 56, in either direction of the double arrow 58 so that the retainer 21 extends away from the rear side 54 of the central portion 50 to greater or lesser extents.

[0023] Figure 8 also shows the retainer 21 and its hook-shaped end part 22 being deflected downwardly to a position 21", indicated by dotted lines. Such forced deflection and the resulting resilient relaxation of the retainer 21 is generally in the vertical direction of double arrow 59. This vertical movement of the retainer 21 is accommodated by the opening 56 which is relatively large in the vertical direction and optionally by the relatively more flexible nature of the retainer 21 which is preferably made of spring steel wire.

[0024] As seen in Figure 9, the lower corner assembly 13 also has a central portion 60 and parallel front and rear sides 62 and 64. A relatively small opening 66 is provided in the rear side 64 of the central portion 60, through which the relatively less flexible retainer 23 extends and from which its hook-shaped end part 24 extends rearwardly of the corner assembly 13. As with the upper corner assembly 11 of Figure 8, the distance that the retainer 23 and its hook-shaped end part 24 of the lower corner assembly 13 extend rearwardly of the central portion 60 can be varied, and one possible further position is indicated as 23' by dotted lines. In this regard, the retainer 23 can be moved, relative to the

opening 66, in either direction of the double arrow 68 so that the retainer 23 extends from the rear side 64 of the central portion 60 to greater or lesser extents.

[0025] The lower corner assemblies 13 and 15 support the weight of the perimeter frame 1 and its sheet-like panel 19. For this reason, their retainers 23 and 25 preferably are not allowed to be deflected significantly upwardly by the weight of the perimeter frame 1 as shown in Figure 9. Such limited vertical movement of the retainers 23 and 25 is obtained by providing openings 66 in the rear sides 64 of their central portions 60 that are relatively small vertically and by making the retainers 23 and 25, if necessary, relatively inflexible, preferably of spring steel wire.

[0026] Figures 8 and 9 also show that the rear sides 54 and 64 of the central portions 50 and 60 of the upper and lower corner assemblies 11 and 13, as well as of the other upper and lower corner assemblies 15 and 17 (not shown), are provided with an additional, unused opening 56A and 66A, respectively. As a result, each of the upper and lower retainers 21 and 23, as well as each of the other upper and lower retainers 27 and 25 (not shown), can alternatively be extended from these additional openings 56A and 66A. Thereby, the corner assemblies 11 and 13 of Figures 8 and 9, as well the corner assemblies 15 and 17 (not shown), can be placed in either right or left hand positions in the perimeter frame 1 of this invention. For example, by repositioning the retainers 21 and 23 to extend from openings 56A and 66A in the corner assemblies 11 and 13, the right hand corner assemblies 11 and 13 as shown in Figures 1-8 can also be used on the left hand side of the perimeter frame 1 as its corner assemblies 15 and 17, respectively, as shown in Figures 1-8. This allows a substantial reduction in the number of different components which have to be manufactured and stocked for the perimeter frame 1.

[0027] In Figures 1-8, first and second legs 72 and 74, extending at right angles to each other from the central portion 50 of the corner assembly 11 and parallel to the first and second sides 52 and 54, are inserted in the adjacent open ends of the frame member 3 and 5 in a conventional manner and are thereby hidden from view. Likewise, first and second legs 72 and 74 (not shown), extending at right angles to each other from the central portion 60 of the corner assembly 13 and parallel to the first and second sides 62 and 64, are inserted in the open ends of the adjacent frame member 5 and 7 in a conventional manner in Figure 9 and are thereby hidden from view. In the same manner, first and second legs 72 and 74 (not shown), extending at right angles to each other from each central portion 50 or 60 of the each of the other corner assemblies 15 and 17, are inserted in the ends of the adjacent frame member 3, 5, 7 and 9 in a conventional manner and are thereby also hidden from view. In this regard, the corner assemblies 11, 13, 15 and 17 of this invention, including their central portions 50 and 60 and their legs 72 and 74 and their

attachment to the frame members 3, 5, 7, and 9, are conventional, except for their retainers 21, 23, 25 and 27 and their interior structures, as described below, by which the retainers can be extended or retracted and their hook-shaped end parts 22, 24, 26 and 28 can be held on to an architectural opening.

[0028] Figures 10-13 show details of the interiors of the central portion 50 and first leg 72 of the corner assembly 11 which are typical of a central portion and a leg of at least the upper corner assemblies 11 and 17 of this invention. The first leg 72 serves, in a conventional manner, to hold the corner assembly 11 and its central portion 50 in sliding engagement with the hollow interior of an adjacent frame members (such as 3). The interior of the central portion 50 and first leg 72 serve also to hold and restrain movement of the portions of the retainer 21 which do not extend rearwardly and outwardly from the central portion 50 through its opening 56 or 56A. Figures 10 and 12 show the retainer 21 in its relatively unextended and undeflected position relative to the interiors of the central portion 50 and first leg 72. Figure 11 shows the retainer 21 in its extended position 21' and Figure 13 shows the retainer 21 in its deflected position 21" relative to the interiors of the first leg 72 and the central portion 50.

[0029] As seen from Figures 10-13, the interior of the first leg 72 contains an elongated cavity 76 which contains an elongated serpentine, preferably horizontally serpentine, second end part 90, of the retainer 21. Preferably, the cavity 76 and the second end part 90 of the retainer 21 are both elongated in a direction along the length of the leg 72, i.e., parallel to the first and second sides 52 and 54 of the central portion 50. It is also preferred that the cavity 76 be open at the rear side of the corner assembly 11, preferably along substantially the entire length of the cavity 76, to allow the elongated second end part 90 of the retainer 21 to be easily inserted therein with its hook-shaped end part 22 extending outwardly of the opening 56 in the central portion 50. The crests 92 and 94 on opposite sides of the serpentine second end part 90 of the retainer 21 resiliently engage the front and rear walls 78 and 79 of the cavity 76 to frictionally restrain movement of the serpentine second end part 90 of the retainer 21 within the cavity 76. The serpentine configuration of the second end part 90 also serves to keep the retainer 21 from twisting in the cavity 76 so that its hook-shaped end part 22 stays in proper orientation for engaging a window frame 29.

[0030] As also seen from Figures 10-13, the cavity 76 in the first leg 72 is connected, through a rearwardly extending channel 57 in the central portion 50 of the corner assembly 11, to the opening 56 at the rear side 54 of the central portion 50. Preferably, the channel 57 in the central portion 50 is also open at one side of the corner assembly 11 to allow a central part 96 of the retainer 21 to be easily inserted therein. The central part 96 of the retainer 21 extends through the channel 57 and the opening 56 and becomes thereby rearwardly

curved. The curved central part 96 of the retainer 21, together with guiding surfaces on the edges of opening 56, ensure that the hook-shaped end part 22 of the retainer 21 is readily movable towards and away from the rear side 54 of the central portion 50 of the corner assembly 11 along a curved path. The structure described above regarding: i) the elongated serpentine second end part 90 of the retainer 21, within the elongated cavity 76 of the first leg 72, ii) the curved central part 96 of the retainer, within the channel 57 and the opening 56 in the rear side 54 of the central portion 50, and iii) the hook-shaped end part 22 outside and rearward of the rear side 54 of the central portion 50 of the corner assembly 11 are typical of all the corner assemblies 11, 13, 15 and 17 of the perimeter frame 1 of this invention.

[0031] Figures 12 and 13 show one of the upper corner assemblies 11 and in particular show that, in its first leg 72, the end of the cavity 76 remote from the central portion 50 is relatively narrow in the vertical plane, but the cavity 76 gradually widens vertically towards its other end, as it joins the channel 57. Likewise, the channel 57 gradually widens vertically as it goes from its end in communication with the cavity 76 to the opening 56 in the rear side 54 of the central portion 50. This profile of the cavity 76 allows relatively resilient deflection of the retainer 21 outside of the corner assembly 11 (as shown in Figure 8). In Figure 13, the retainer 21 is shown in its deflected position 21", but normally, the retainer will not stay in the deflected position 21" shown in Figure 13 but will, in fact, be resiliently biased towards its undeflected position as shown in Figure 12. In the perimeter frame 1, the other upper corner assembly 17 will also have this structure for its cavity 76 and channel 57. However in the lower corner assemblies 13 and 15, each cavity 76 and channel 57 are preferably of constant width vertically and do not widen gradually as they go towards the opening 66, which is vertically smaller than the corresponding opening 56 in the upper corner assemblies.

[0032] Figures 14-16 show another embodiment of a corner assembly 115 of the invention which is similar to the corner assembly 15 of Figures 1-13 and for which the same reference numerals or corresponding reference numerals (greater by 100) are used below for describing the same parts or corresponding parts, respectively.

[0033] The corner assembly 115 has a central portion 160 connected to a pair of perpendicular legs 72 and 74 (hidden from view) inserted in adjacent frame members 107 and 109 of a perimeter frame of this invention. The rear side 164 of the central portion 160 has rectangular openings 166 and 166A, from one of which 166 a retainer 125 extends rearwardly. The retainer 125 is generally rearwardly curved and arc-shaped and includes: a hook-shaped end part 126; an elongate other end part 190 within a cavity 76 (not shown) within the first leg 107; and a central part 196. The retainer 125 also has a rectangular cross-section that is wider

than it is thick to give the retainer enhanced torsional stability. Preferably, the rectangular cross-section of the elongate end part 190 and central part 196 of the retainer 125 conforms closely to the rectangular cross-sections of the opening 166 and 166A and the cavity 76, so that there is a close fit of the retainer in the cavity and openings to keep the retainer from twisting and so that its hook-shaped end part 126 stays in proper orientation for engaging a window frame.

[0034] The central part 196 of the retainer 125 has saw tooth serrations 197 on its upper surface for engagement with a worm screw member 145 mounted on the rear side 164 of the central portion 160. The openings 166 and 166A, prior to use, can be closed by a break-through wall portion which then can be selectively removed depending on the opening 166 and 166A, through which the retainer 125 is to extend. Only the opening 166 and 166A, from which the retainer 125 is to extend, then needs to be removed, and the exterior surface of the corner assembly 115 can thereby retain a generally smooth and closed appearance.

[0035] In Figure 15, two positions of the retainer 125 are shown. In a first position 125', the hook-shaped end part 126 of the retainer is at a distance "c" from the rear side 164 of the central portion 160. A suitable minimum distance "c" for the first position 125' could be about 5mm. In a second position 125", the hook-shaped end part 126 of the retainer 125 is at a distance "d" from the rear side 164 of the central portion 160. A suitable maximum distance "d" for the second position 125" would be about 20 mm or more.

[0036] Figure 15 also shows schematically the arc-shaped other end part 190 and central part 196 of the retainer 125, which enable the retainer to move through an arc shaped path, so that its movement between position 125' and position 125" corresponds to an angular track α .

[0037] Figure 16 shows a preferred worm screw 145A that is snap-fit in a cavity 146 in the rear side 164 of the central portion 160 in a direction generally indicated by arrow 147. The worm screw 145A is provided with a bifurcated end 148, resiliently carrying detent surfaces 149 which can engage corresponding detent surfaces 149A within the cavity 146 of the central portion 160. To engage the saw tooth serrations 197 on the top surface of the retainer 125, the worm screw 145A is provided with a helical thread 198.

[0038] Once the worm screw 145 or 145A is mounted in the central portion 160, it can be freely rotated in both directions to adjust the retainer 125 inwardly and outwardly of the central portion 160 through engagement of the saw tooth serrations 197. In this regard, a hook-shaped end part 126 of the retainer 125 extends outwardly of the aperture 166. By means of the worm screw 145, the retainer 125 can be moved inwardly and outwardly of the aperture 166, whereby its elongated, rearwardly curved, second end part 190 and its rearwardly-curved central part 196 can be moved inwardly

and outwardly of the elongate cavity 76 within the first leg 72 and the connecting channel 57 within the central portion 160.

[0039] As seen in Figure 14, the worm screw 145 is provided with a conventional head portion 199, by which it can be rotated. In this regard, the head portion 199 is provided with a recessed slot 200 for engagement by a screw driver or the like.

[0040] Figures 17-19 show a further embodiment of a perimeter frame 201 which is similar to the perimeter frame 1 of Figures 1-13 and for which the same reference numerals or corresponding reference numerals (greater by 200) are used below for describing the same parts or corresponding parts, respectively. The perimeter frame 201 includes four corner assemblies 211, 213, 215 and 217 of the invention which are similar to the corner assembly 115 of Figures 14-16 and for one of which 213 the same reference numerals or corresponding reference numerals (greater by 100) are used below for describing the same parts or corresponding parts, respectively. In this regard, the corner assembly 213 has a central portion 260 connected to a pair of perpendicular legs 72 and 74 (hidden from view) inserted in adjacent frame members 205 and 207 of the perimeter frame 201.

[0041] The perimeter frame 201 is preferably provided with hand grips 202 which facilitate the manipulation of the perimeter frame when fitting it into a window opening frame 30 (not shown). The hand grips 202 can thereby also help to prevent damage to its screen-like panel 219. These hand grips or other similar handles are also preferably included in any of the embodiments to facilitate installation.

[0042] The corner assembly 213 is provided with two apertures 266 and 266A in the rear side 264 of its central portion 260. A hook-shaped end part 224 of a retainer 223 extends outwardly of the aperture 266. By means of a worm screw 245 on the rear side 264 of the central portion 260, the retainer 223 can be moved inwardly and outwardly of the aperture 266, whereby its elongate second end part 290 and its rearwardly-curved central part 296 can be moved inwardly and outwardly of the elongate cavity 76 (not shown) within the first leg 72 and the connecting channel 57 within the central portion 260. A like arrangement can be seen on the other corner assemblies 211, 215 and 217.

[0043] Figure 18 shows the worm screw 245 and the retainer 223 free from the surrounding structure of the corner assembly 213. In this embodiment, a helical screw thread 298 engages a segment of gear teeth 297 on the outwardly curved edge of the arc-shaped central portion 296 of the retainer 223. It is also seen that in this embodiment, the worm screw 245 has a first screw driver slot 300 in its head portion 299 and a second screw driver slot 300A at its opposite axial end.

[0044] Each of the screw driver slots 300 and 300A is engageable from a respective opposite side of the screen-like panel 219 so that adjustments can be made

from inside and outside the building and the window opening, to which the screen panel 219 has been fitted.

[0045] For embodiments having worm screws or other similar mechanisms for extending and retracting the hooks, it is possible to locate the operating feature, for instance the screw driver slot, one either side of the perimeter frame relative to extension of the hook. However, where perimeter frames are hung on the outside of windows, the operating feature preferably faces inwardly where they can be operated to retract the retainers so as to hold the perimeter frames securely on the outside of the windows. Of course, the operating features, eg the worm screws, could also be mounted so that their head portions could be reached from the outside of the perimeter frames are to be held on the inside of the windows.

[0046] Figure 19 shows the worm screw 245 and the retainer 223 from the bottom rear of the corner assembly 213. A reference "x" denotes the distance between the hook-shaped end 224 of the retainer 223 from the rear side 264 of the corner assembly 213.

[0047] The invention as embodied in Figures 14 to 19 can be combined with that as embodied in Figures 1-13. In particular, it is possible to combine the use of the spring steel hooks of Figures 1 to 13 with an operating mechanism, such as the worm screws of Figures 14 to 19. As one example, the spring steel hooks can each be mounted on one end of an elongated spring steel central part (like the central part 96 of Figures 10 to 13) which, in turn, is connected to a curved toothed plastic member like the central part 196,296 of Figures 14 to 19. In this way, a worm screw can engage the toothed plastic member so as to extend and retract the spring steel hook. As another example, a spring steel member could itself be formed with means to engage some operating feature. For instance, the spring steel member could itself include teeth for engagement with a worm screw or, indeed, the serpentine section of Figures 10 to 13 could itself be engaged by a worm screw to affect extension and retraction of the hook.

[0048] The perimeter frames 1 and 201 of this invention not only improve the positioning of a screen-like panel 19 and 219 in a window opening 30 but also hold such a screen-like panel in position without any play on a variety of window opening edges. This allows for easy mounting and adjustment of a screen-like panel with simple and cost-effective methods and tools. A particular advantage of the corner assemblies 11, 13, 15, 17, 115, 211, 213, 215 and 217 of these perimeter frames is that they can be used in prefabricated window systems, in which drilling of holes is not permitted. Another advantage is that the screen-like panel can be left in position while the window is closed. In this regard, the windows described with respect to Figures 2-7 usually are provided with a hinged pane opening towards the inside of a building, but in certain countries, there is a preference for windows opening to the outside of a building which may result in an inverse arrangement of

parts of the corner assemblies of this invention but which should otherwise be considered to be within the scope of the invention.

[0049] This invention is, of course, not limited to the above-described embodiments which may be modified without departing from the scope of the invention or sacrificing all of its advantages. In this regard, the terms in the foregoing description and the following claims, such as "upper", "lower", "front", "rear", "inner", "outer", "horizontal", "vertical", "central" and "end", have been used only as relative terms to describe the relationships of the various elements of the corner assemblies of the invention.

Claims

1. A nodal assembly (11, 13, 15, 17, 19, 115, 211, 213, 215, 217) for connecting at least two adjacent frame members of a perimeter frame (1, 201), the nodal assembly comprising:
 - a central portion (50, 60, 160, 260) having parallel first and second sides (52, 54, 62, 64, 162, 164, 262, 264) and an opening (56, 56A, 66, 66A, 166, 166A, 266, 266A) in the second side (54, 64, 164, 264);
 - a first leg (72) extending from the central portion in a first direction parallel to the first side (52, 62, 162, 262) and having a cavity (76) within it in communication with the opening;
 - a second leg (74) extending from the central portion in a second direction different from the first direction but also parallel to the first side; and
 - a retainer (21, 23, 25, 27, 125, 221, 223, 225, 227) slidably received in the cavity (76) and movable between a retracted position substantially within the central portion (50, 60, 160, 260) and the first leg (72) and an extended position in which the retainer extends substantially outwardly of the opening (56, 56A, 66, 66A, 166, 166A, 266, 266A) in the second side (54, 64, 164, 264) of the central portion (50, 60, 160, 260) and away from the second side.
2. The nodal assembly of claim 1 wherein: the first and second sides (52, 54, 62, 64, 162, 164, 262, 264) of the central portion (50, 60, 160, 260) are laterally opposite sides, preferably front and rear sides; the cavity (76) is substantially parallel to the first leg (72); one end of the cavity (76) is in communication with one end of a channel (57) in the central portion; and the other end of the channel (57) is in communication with the opening (56, 56A, 66, 66A, 166, 166A, 266, 266A) in the central portion.
3. The nodal assembly of claim 1 or 2 wherein the retainer (21, 23, 25, 27, 125, 221, 223, 225, 227)

comprises:

- an elongated part (90, 190, 290) at one end, preferably a front end part, which is slidably received in the cavity (76) in the first leg (72) and in the channel (57), if present, and which can be moved outwardly, preferably rearwardly, of the second side (54, 64, 164, 264) of the central portion through the opening (56, 56A, 66, 66A, 166, 166A, 266, 266A) in the second side; and
 - a hook-shaped part (22, 24, 26, 28, 126, 222, 224, 226, 228) at its other end, preferably a rear end part, which is located outwardly, preferably rearwardly, of the second side (54, 64, 164, 264) of the central portion (50, 60, 160, 260); the retainer, in its retracted position, having a central part (96, 196, 296) substantially within the cavity (76) in the first leg and in its extended position, having its central part extending outwardly of the cavity through the opening (56, 56A, 66, 66A, 166, 166A, 266, 266A) in the central portion and away from, preferably rearwardly of, the second side of the central portion.
4. The nodal assembly of any one of claims 1-3 wherein the elongated end part (90, 190, 290) of the retainer (21, 23, 25, 27, 125, 221, 223, 225, 227) has a serpentine shape.
 5. The nodal assembly of claim 4 wherein the elongated end part has a horizontally serpentine shape.
 6. The nodal assembly of claim 4 or 5 wherein crests (92, 94) on opposite sides of the elongated end part of the retainer (21, 23, 25, 27, 125, 221, 223, 225, 227) resiliently engage walls of the cavity (76) to frictionally restrain movement of the elongated end part of the retainer within the cavity.
 7. The nodal assembly of any one of claims 1-6 wherein the retainer is made of a spring steel.
 8. The nodal assembly of any one of claims 1-7 wherein the end of the cavity (76), remote from the central portion, is relatively narrow in the vertical plane and gradually widens towards its other end.
 9. The nodal assembly of any one of claims 2-8 wherein the channel (57) gradually widens in the vertical plane as it goes from its end in communication with the cavity (76) to the opening (56, 56A, 66, 66A, 166, 166A, 266, 266A) in the second side of the central portion.
 10. The nodal assembly of any one of claims 3-9 wherein the central part (96, 196, 296) of the

retainer (21, 23, 25, 27, 125, 221, 223, 225, 227) is rearwardly curved.

11. The nodal assembly of claim 10 wherein the elongated end part (190, 290) and the central part (196, 296) of the retainer (125, 221, 223, 225, 227) are arc-shaped and rearwardly curved and have a rectangular cross-section that is wider than it is thick. 5
12. The nodal assembly of claim 11 wherein the central part (196, 296) of the retainer (125, 221, 223, 225, 227) has serrations (197) or teeth (297) on a surface and wherein a worm screw (145, 245) is mounted on the central portion (150, 250), having threads (198, 298) which engage the serrations or teeth of the central part of the retainer. 10
15
13. A perimeter frame (1) comprising:
 - a plurality of elongate frame members (3, 5, 7, 9, 203, 205, 207, 209); 20
 - a plurality of the nodal assemblies of any one of claims 1-11, each nodal assembly having first and second legs (72, 74) engaging the ends of two adjacent frame members to form the perimeter frame and a retainer (21, 23, 25, 27, 125, 221, 223, 225, 227); and optionally 25
 - a sheet-like panel (19, 219) attached to the perimeter frame to cover an area defined by the perimeter frame; each of the retainers being adapted to engage a window opening (30) having a polygonal contour corresponding to the perimeter frame so that the sheet-like panel, if present, covers the window opening. 30
35
14. The frame of claim 13 wherein an upper nodal assembly includes a retainer made of a relatively flexible material and a lower nodal assembly includes a retainer made of a relatively inflexible material. 40

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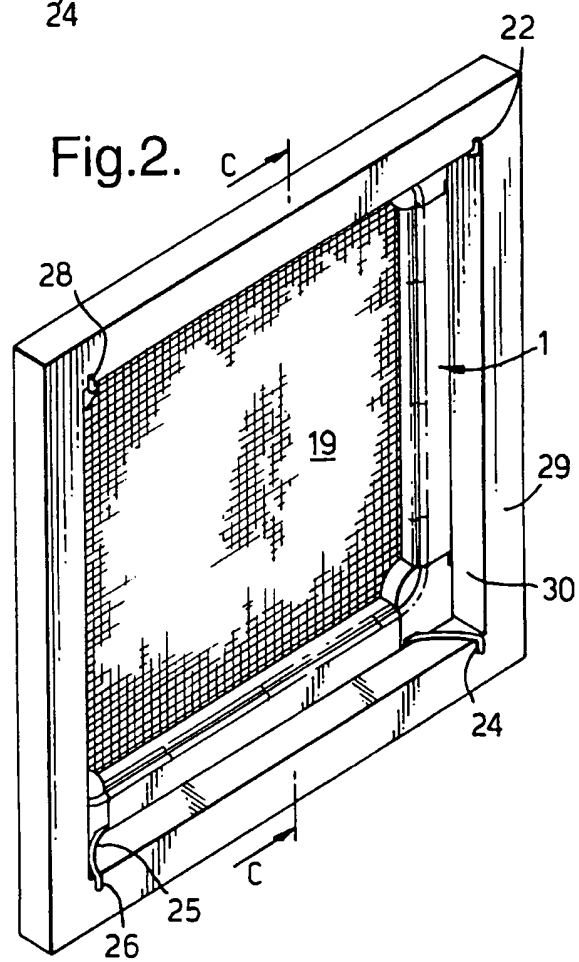
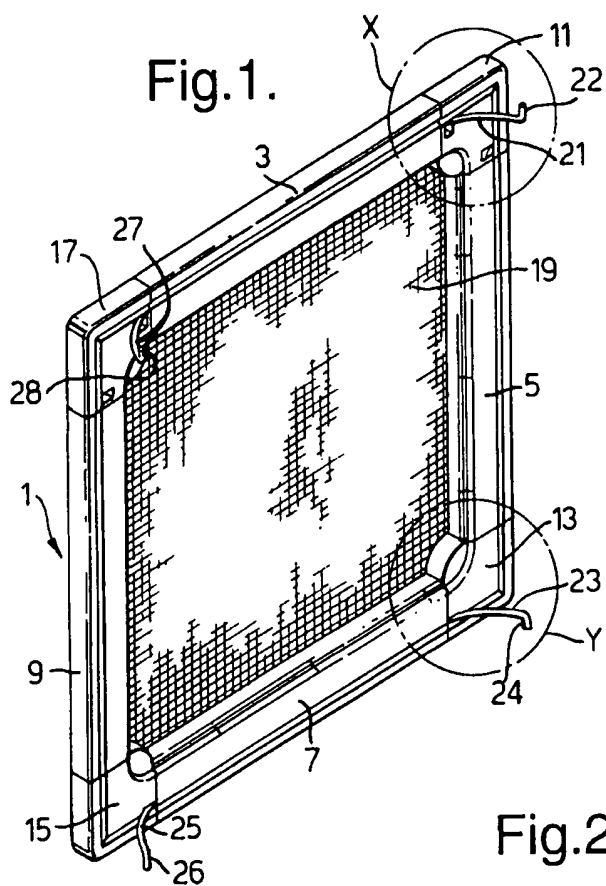


Fig.3.

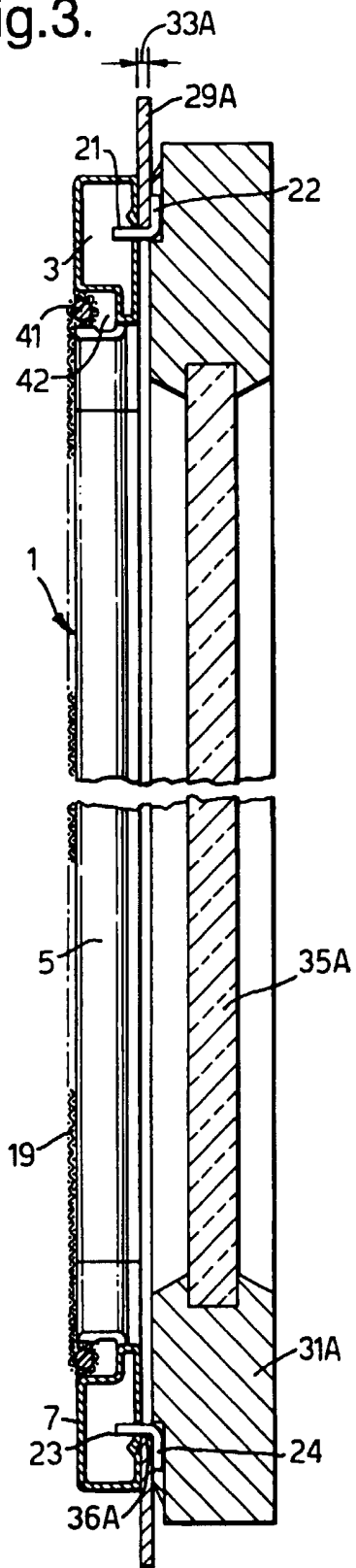


Fig.4.

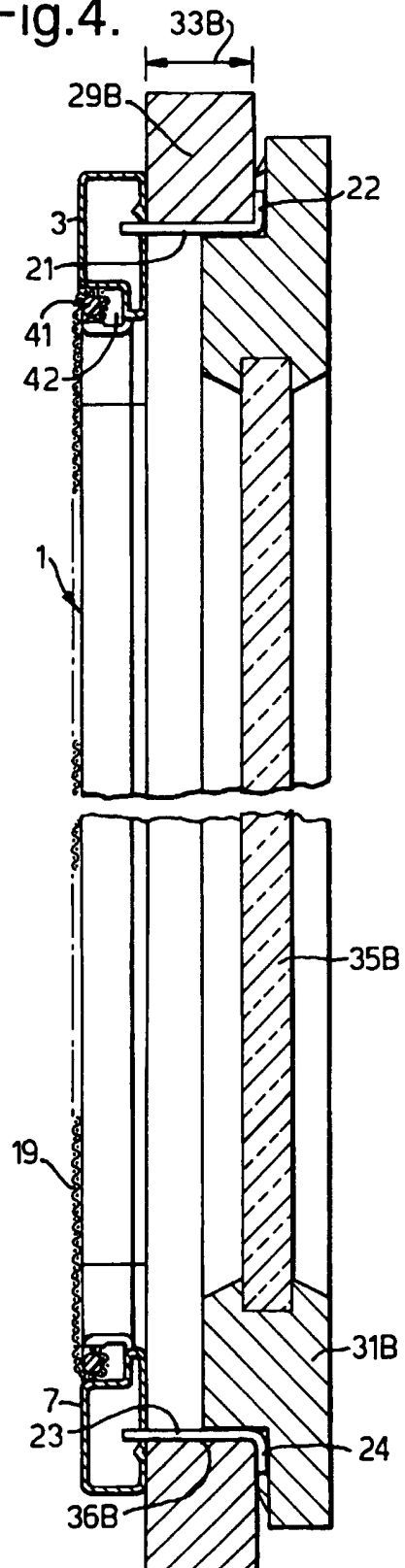


Fig.5.

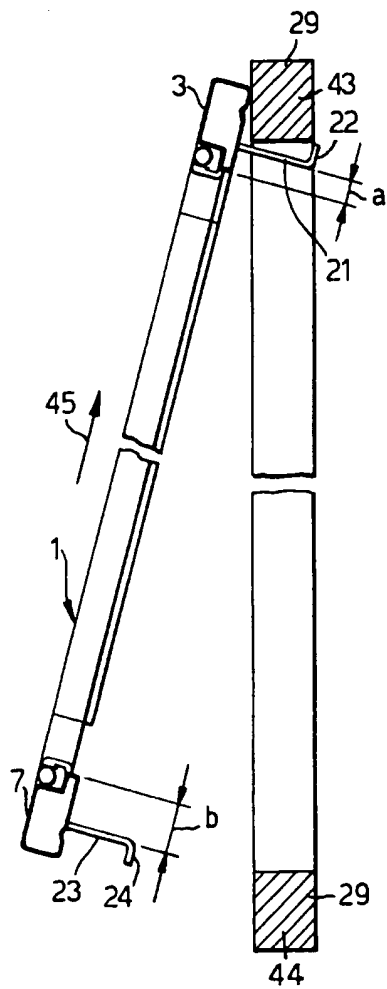


Fig.6.

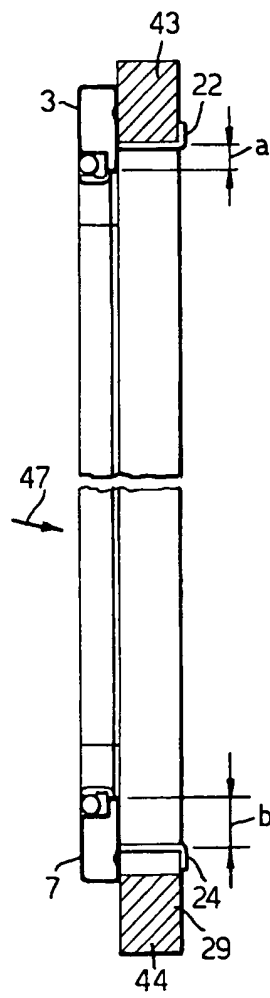


Fig.7.

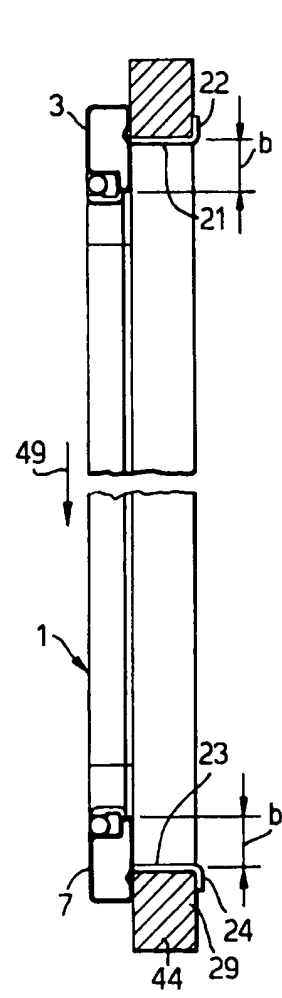


Fig.8.

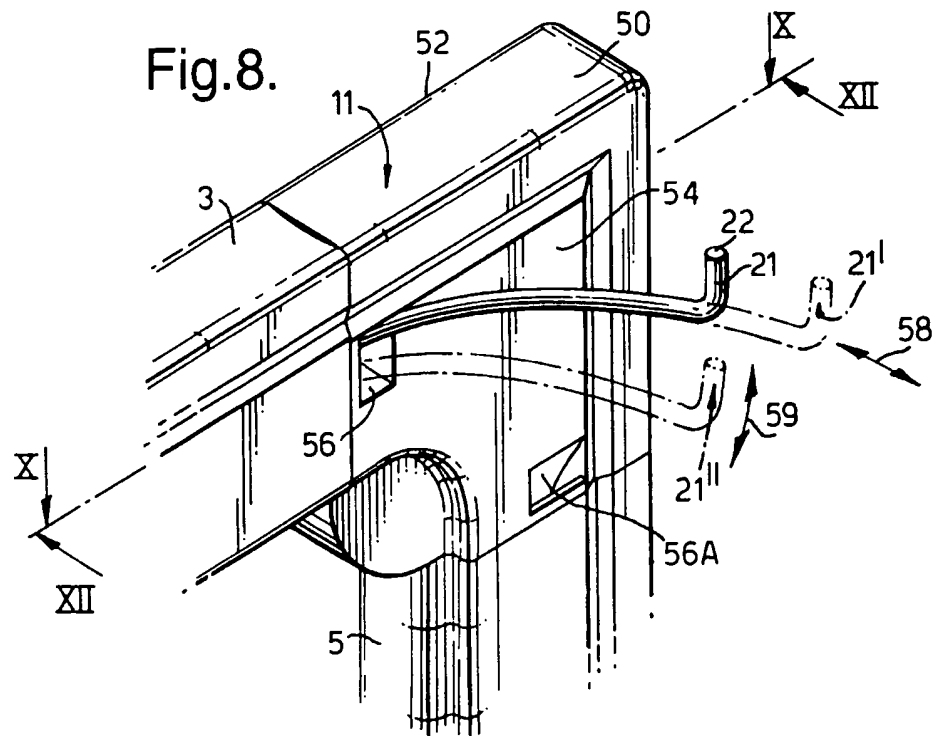


Fig.9.

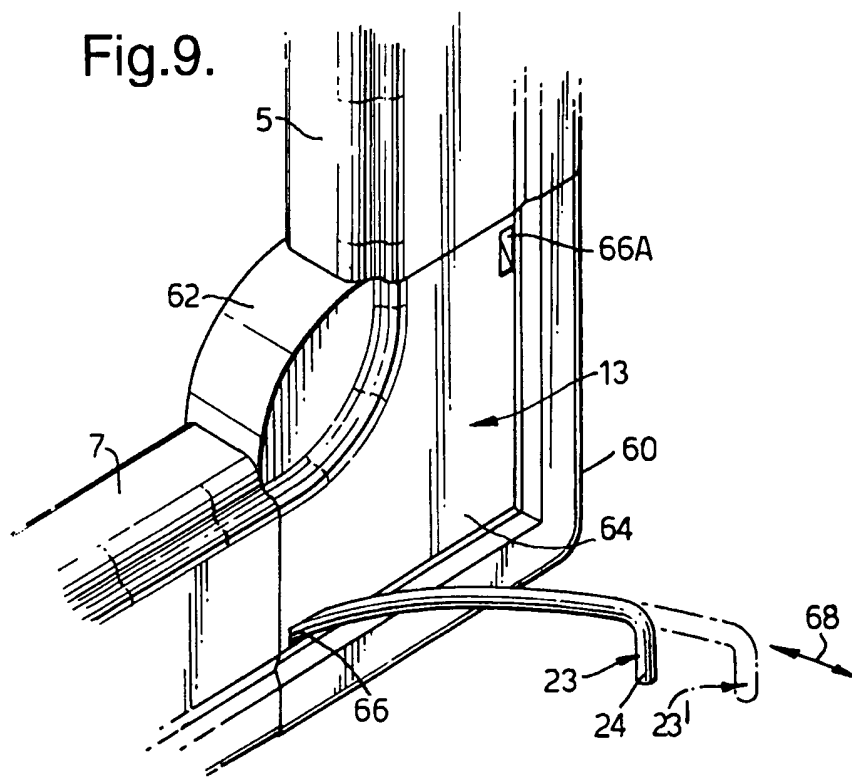


Fig.10.

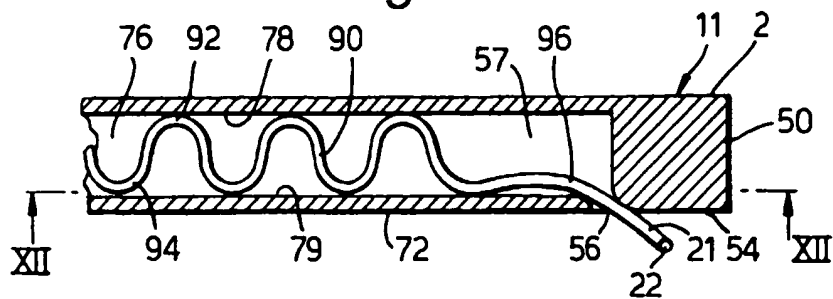


Fig.11.

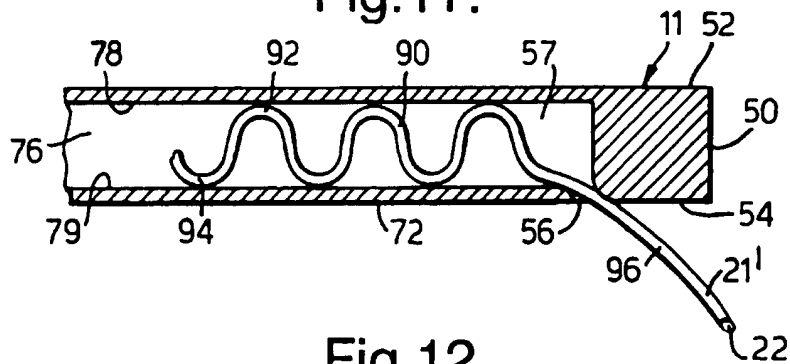


Fig.12.

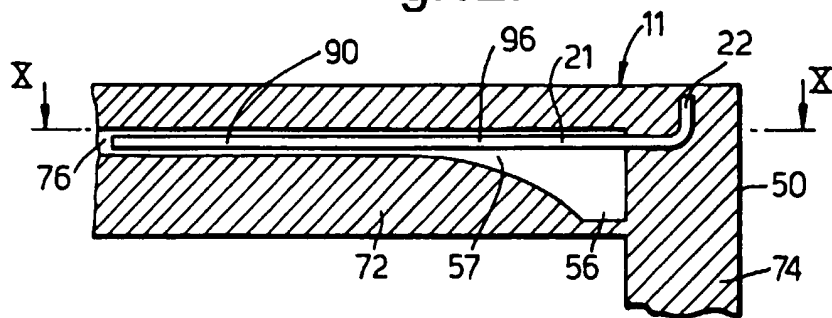
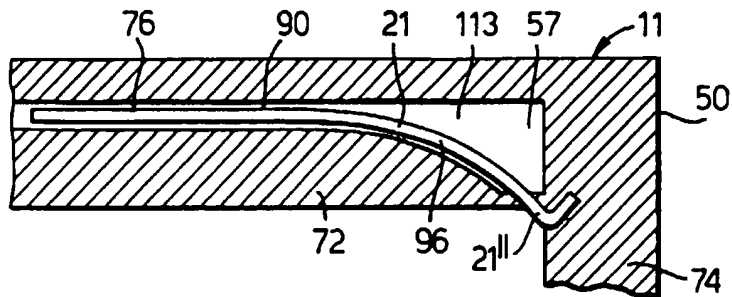


Fig.13.



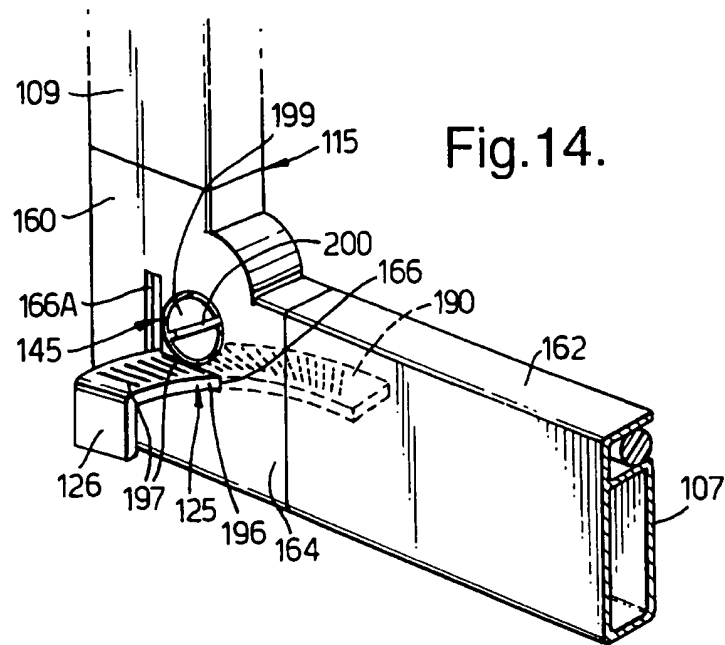


Fig. 14.

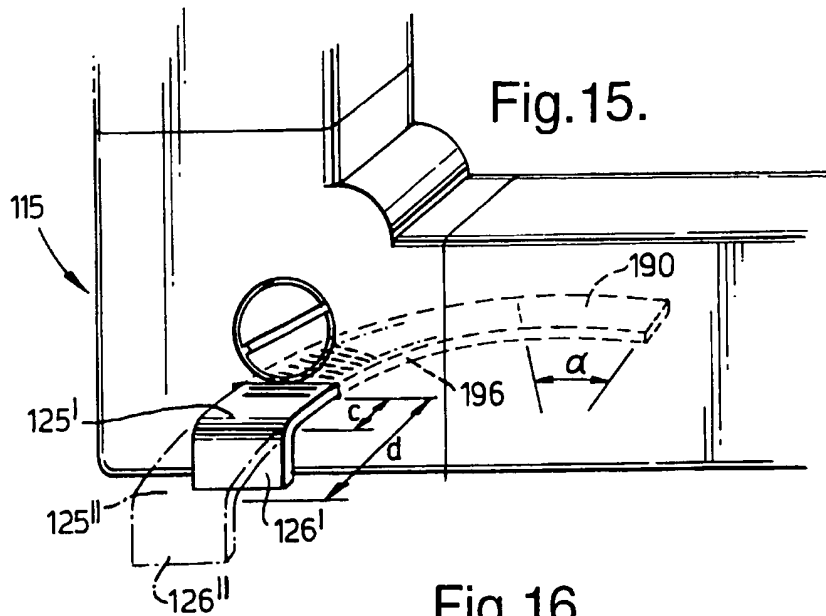


Fig. 15.

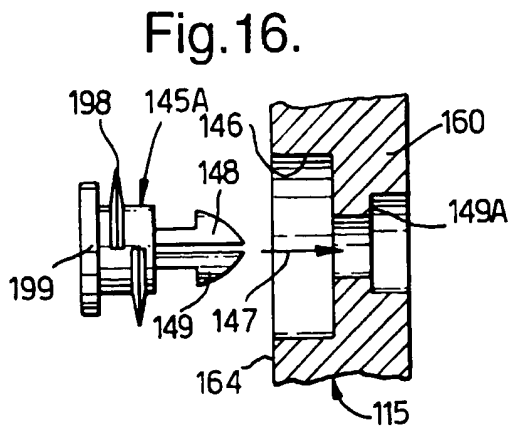


Fig. 16.

Fig.17.

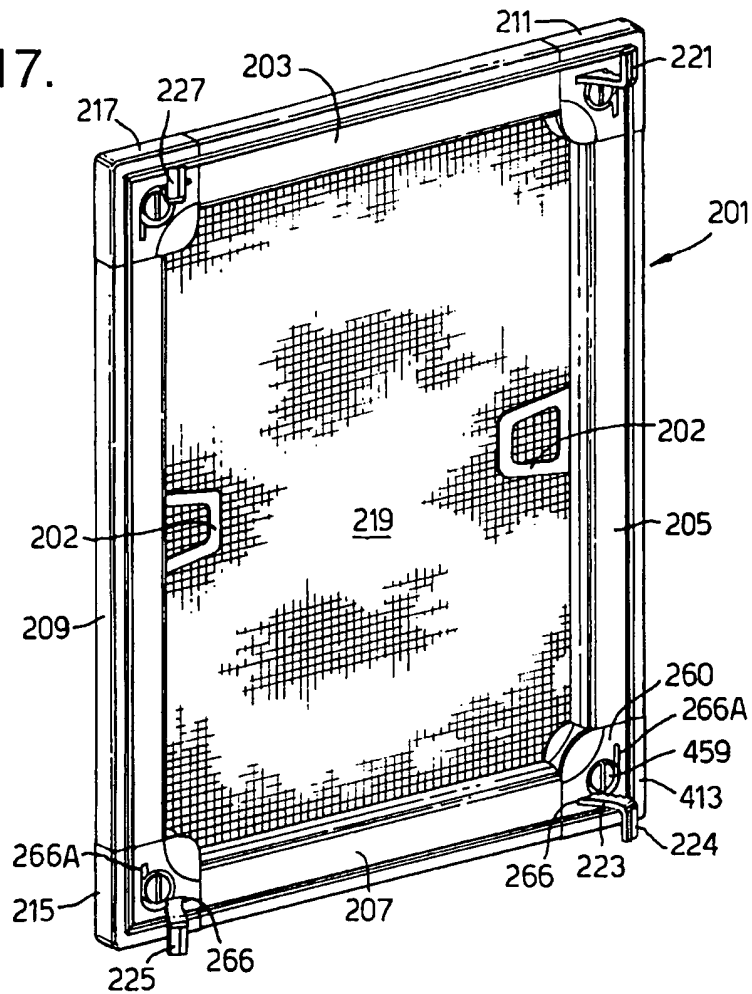


Fig.18.

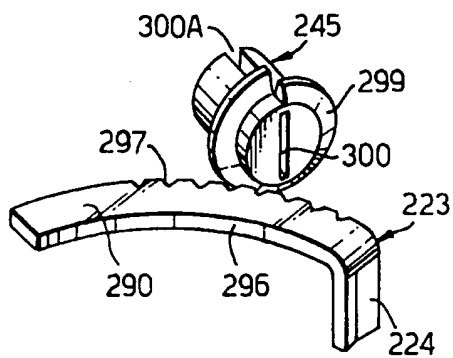
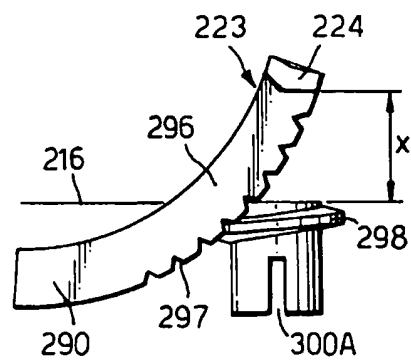


Fig.19.





⑮ **BUNDESREPUBLIK
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Prüfungsantrag gem. § 44 PatG ist gestellt

⑤④ **Vorsatzfenster**

⑤⑦ Vorsatzfenster zum Einsetzen in einen eine Fensteröffnung begrenzenden Blendrahmen mit einem ein Gittergewebe aufweisenden Spannrahmen mit wenigstens einem ersten und wenigstens einem zweiten, an gegenüberliegenden Rahmenprofilen des Spannrahmens angeordneten, den Blendrahmen in Einbaulage hintergreifenden Haltewinkel, wobei an dem ersten und/oder zweiten Haltewinkel ein sich am und/oder im Blendrahmenprofil abstützendes, zum Einsetzen des Vorsatzfensters elastisch verformbares Federelement angeordnet ist.

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[0001] Die Erfindung betrifft ein Vorsatzfenster zum Einsetzen in eine Fensteröffnung begrenzenden Blendrahmen mit einem ein Gittergewebe aufweisenden Spannrahmen mit wenigstens einem ersten und wenigstens einem zweiten, an gegenüberliegenden Rahmenprofilen des Spannrahmens angeordneten, den Blendrahmen in Einbaulage hintergreifenden Haltewinkel.

[0002] Ein gattungsgemäßes Vorsatzfenster ist aus der DE 198 35 390 A1 bekannt. Dieses Vorsatzfenster dient als Insektenschutzvorrichtung und wird von außen an einem Blendrahmen befestigt. Der aus Rahmenprofilen aufgebaute Spannrahmen ist mit einem Gittergewebe oder einem netzartigen Schutzgitter versehen und verhindert bei geöffnetem Fenster das Eindringen von Insekten in das Zimmer. Bei dieser Insektenschutzvorrichtung erfolgt die Befestigung über insgesamt vier Einhängelaschen, von denen die beiden unteren spannrahmenfest angeordnet sind. Die beiden oberen Einhängelaschen sind jeweils an einem vertikal verschiebblichen Gleitkörper befestigt, der am Spannrahmenprofil angeordnet ist und mit einer separaten Druckfeder zusammenwirkt. Zum Einhängen der Insektenschutzvorrichtung werden die oberen Haltelaschen an dem waagerechten oberen Abschnitt des Blendrahmens angesetzt und der Spannrahmen wird relativ zu den Einhängelaschen nach oben verschoben, so dass die unteren, feststehenden Einhängelaschen durch die Fensteröffnung in ihre Einbaulage gebracht werden können. Beim Loslassen des Vorsatzfensters werden die oberen, beweglichen Einhängelaschen durch die Federkraft am Spannrahmen nach außen d. h. nach oben gedrückt, so dass die Insektenschutzvorrichtung am Blendrahmen fixiert ist. Dieser Mechanismus weist allerdings den Nachteil auf, dass er aus vielen Einzelteilen besteht.

[0003] Der Erfindung liegt daher das Problem zugrunde, eine einfacher aufgebaute Befestigung für ein Vorsatzfenster zu schaffen.

[0004] Zur Lösung dieses Problems ist bei einem Vorsatzfenster der eingangs genannten Art erfindungsgemäß vorgesehen, dass an dem ersten und/oder zweiten Haltewinkel ein sich am und/oder im Blendrahmenprofil abstützendes, zum Einsetzen des Vorsatzfensters elastisch verformbares Federelement angeordnet ist.

[0005] Im Unterschied zum bekannten Stand der Technik wird die Federfunktion nicht von einer separaten, entfernt vom Haltewinkel angeordneten Feder übernommen, sondern die Federwirkung wird durch ein direkt am Haltewinkel angeordnetes Federelement erzielt. Es kann auch vorgesehen sein, dass der Haltewinkel oder ein Abschnitt des Haltewinkels federt.

[0006] Mit besonderem Vorteil ist das Federelement als Blattfeder ausgebildet. Grundsätzlich könnte auch eine Spiralfeder eingesetzt werden, insbesondere eine Spiraldruckfeder, deren Längsachse im Wesentlichen parallel zur Bewegungsrichtung des Federelements angeordnet ist. Die Verwendung einer Blattfeder bietet jedoch den Vorteil, dass das Federelement im Wesentlichen innerhalb einer Nut und/oder einer Profilkammer des Rahmenprofils angeordnet sein kann. Dadurch wird ein optisch ansprechendes Erscheinungsbild erzielt, denn die Blattfeder kann weitgehend verdeckt eingebaut sein.

[0007] Das vorzugsweise als Blattfeder ausgebildete Federelement kann zwei von der Mitte des Federelements ausgehende, gebogene Schenkel aufweisen, so dass das Federelement im Einbauzustand mit den Endabschnitten der Federschlenkel an einer Innenfläche des Rahmenprofils abgestützt sein kann, während der mittlere Bereich des Federelements an der gegenüberliegenden Innenfläche des Rahmen-

profils abgestützt ist.

[0008] Es empfiehlt sich, den Haltewinkel in der Mitte des Federelements anzuordnen, wobei der Haltewinkel mit der Längsachse des Federelements einen rechten Winkel bilden kann. Die Größe des Haltewinkels ist dabei an die Einbauverhältnisse am Blendrahmen angepasst. Alternativ kann der Haltewinkel auch am Ende des Federelements angeordnet sein. Dieses Federelement weist vorzugsweise einen einzigen S-förmigen Schenkel auf.

[0009] Das Federelement mit seinen Schenkeln kann beiderseits des Haltewinkels im Wesentlichen symmetrisch ausgebildet sein. Dadurch wird sichergestellt, dass der Haltewinkel senkrecht zur Längsachse des Federelements und damit auch senkrecht zum Rahmenprofil des Spannrahmens angeordnet ist.

[0010] In vorteilhafter Weiterbildung der Erfindung kann vorgesehen sein, dass der erste und/oder zweite Haltewinkel einstückig ausgebildet ist. Dadurch ergeben sich fertigungstechnische Vorteile, denn das Federelement und der Haltewinkel können beispielsweise aus einem Blech ausgestanzt werden. Alternativ kann auch vorgesehen sein, dass der Haltewinkel mit dem Federelement vernietet, verpresst, verschweißt oder verklebt ist. Es sind auch Kombinationen der genannten Befestigungsverfahren denkbar.

[0011] Ein besonders einfacher Aufbau des erfindungsgemäßen Vorsatzfensters wird erzielt, wenn das Federelement in eine hinterschnittene Nut des Rahmenprofils eingesetzt ist. In diesem Fall kann das Federelement vor dem Zusammenbau des aus den Rahmenprofilen bestehenden Spannrahmens seitlich in die Nut eingeschoben werden. Das Federelement ist entlang der Nut beweglich und kann an der gewünschten Stelle befestigt werden. Dieser Aufbau bietet sich bei einseitig offenen Rahmenprofilen an. Anstelle einer hinterschnittenen Nut kann auch ein Profil mit einer einfachen, nicht hinterschnittenen Nut verwendet werden. Das Federelement wird mittels einer aufgesetzten Abdeckung, z. B. in Form einer Abdeckplatte gegen Herausfallen gesichert.

[0012] Das erfindungsgemäße Vorsatzfenster kann auch aus geschlossenen Rahmenprofilen aufgebaut sein, die eine Profilkammer aufweisen. Dazu ist die Profilkammer mit einer Öffnung versehen, die so groß ist, dass das Federelement durch die Öffnung in das Rahmenprofil eingesetzt werden kann. Die Öffnung kann mit einer Abdeckung versehen werden, die eine Ausnahme für den Haltewinkel aufweist.

[0013] Ein besonders guter Halt des Federelements innerhalb des Rahmenprofils wird erfindungsgemäß erzielt, wenn wenigstens ein Endabschnitt des Federelements rechtwinklig abgewinkelt ist. Dadurch wird ein Verdrehen oder Kippen des Federelements innerhalb des Rahmenprofils verhindert. In einer Ausgestaltung der Erfindung ist vorgesehen, dass ein Endabschnitt in einem Gleitschuh aufgenommen ist. Dadurch wird eine unerwünschte Verdrehung des Endabschnitts ausgeschlossen.

[0014] Der Haltewinkel und das Federelement können aus Metall, beispielsweise aus Stahl hergestellt sein. Besonders gut eignet sich ein Federstahlmaterial.

[0015] Um das erfindungsgemäße Vorsatzfenster besonders leicht von der Außenseite an einem Blendrahmen eines Fensters montieren zu können ist vorgesehen, dass die ersten und/oder zweiten Haltewinkel gegen die Rückstellkraft des Federelements zum Spannrahmen hin verschiebbar sind. Es genügt, bei dem erfindungsgemäßen Vorsatzfenster zwei rahmenfeste und zwei verschiebbare Haltewinkel vorzusehen. Das Vorsatzfenster kann mit den verschiebbaren Haltewinkeln am Blendrahmen angesetzt werden. Der Spannrahmen wird gegen die Federkraft bewegt, so dass die gegenüberliegende Seite des Rahmenprofils eingesetzt werden

kann.

[0016] Weitere Vorteile, Merkmale und Einzelheiten der Erfindung ergeben sich aus dem im folgenden beschriebenen Ausführungsbeispiel der Erfindung und den Figuren. Dabei zeigt:

[0017] Fig. 1 einen Haltewinkel mit einem daran angeordneten Federelement,

[0018] Fig. 2 eine Seitenansicht des Haltewinkels mit Federelement aus Fig. 1,

[0019] Fig. 3 eine Draufsicht des Haltewinkels mit Federelement aus Fig. 1,

[0020] Fig. 4 einen Vertikalschnitt durch ein erfindungsgemäßes Vorsatzfenster im Bereich der Rahmenprofile beim Einsetzen in einen Blendrahmen,

[0021] Fig. 5 das Vorsatzfenster aus Fig. 4 nach dem Einbau,

[0022] Fig. 6 eine teilweise geschnittene Ansicht des Vorsatzfensters,

[0023] Fig. 7 das Vorsatzfenster aus Fig. 6 in einer geschnittenen Seitenansicht, und

[0024] Fig. 8 ein Federelement, das an einem Ende einen Haltewinkel und am anderen Ende einen Gleitschuh aufweist.

[0025] Der in Fig. 1 dargestellte Haltewinkel 1 ist rechtwinklig an einem Federelement 2 angeordnet. Das Federelement 2 ist als Blattfeder ausgebildet und besteht aus zwei zueinander symmetrischen Federschenkeln 3, 4, die sich auf beiden Seiten des Haltewinkels 1 erstrecken. In der Nähe des Haltewinkels 1 liegen die entsprechenden Abschnitte der Federschenkel 3, 4 in der Ebene des Haltewinkelabschnitts 5. Daran schließt sich ein gebogener Abschnitt der Federschenkel 3, 4 an, während die weiter außen liegenden geraden Abschnitte 6, 7 in einer Ebene liegen. Die äußeren Endabschnitte 8, 9 des Federelements 2 sind unter einem Winkel von 90° abgewinkelt. Wie in Fig. 1 zu erkennen ist, hat der mittlere Abschnitt des Federelements 2 eine gebogene Form, so dass dieser Teil des Federelements 2 parallel zu den Endabschnitten 8, 9 gegen die Rückstellkraft des Federelements 2 bewegt werden kann. Das auf diese Weise verformte Federelement 2 ist in Fig. 1 gestrichelt gezeigt. Die Verformung des Federelements 2 ist elastisch, so dass es nach dem Loslassen wieder seine Ursprungsform einnimmt. [0026] Fig. 2 zeigt den Haltewinkel 1 mit daran angeordnetem Federelement 2 in einer Seitenansicht. Der Haltewinkel 1 besteht aus den rechtwinklig zueinander angeordneten Haltewinkelabschnitten 5, 10. Der Federweg des Haltewinkels 1 ist gestrichelt gezeichnet. Die Länge der Abschnitte 5, 10 ist an die Größe und Form des Blendrahmens angepasst, an dem das Vorsatzfenster angebracht werden soll.

[0027] In Fig. 3 ist der Haltewinkel mit Federelement 2 in einer Draufsicht dargestellt. Der Haltewinkel 1 und das Federelement 2 sind durch einen Niet 11 miteinander verbunden. Alternativ können der Haltewinkel 1 und das Federelement 2 auch einstückig hergestellt sein, beispielsweise durch Ausstanzen aus einem Blech. Durch den Niet 11 wird eine form- und kraftschlüssige Verbindung des Haltewinkels 1 mit dem Federelement 2 erzielt, so dass sich beide gleichförmig miteinander bewegen. Haltewinkel 1 und Federelement 2 sind aus einem Federstahl hergestellt. Es ist auch möglich, nur das Federelement aus Federstahl herzustellen und den Haltewinkel aus herkömmlichem Stahlblech zu fertigen.

[0028] Fig. 4 zeigt einen Vertikalschnitt durch ein Vorsatzfenster beim Einsetzen in einen Blendrahmen. Dabei sind nur die unteren und oberen, horizontal verlaufenden Rahmenprofile 15, 16 des Spannrahmens 14 gezeigt. Wie in Fig. 4 zu erkennen ist, wird das obere Rahmenprofil 16 am Blendrahmen angesetzt, so dass der Spannrahmen 14 mit

der Blendrahmenebene einen spitzen Winkel bildet. Zum Einsetzen wird das untere Rahmenprofil 15 in Richtung des Blendrahmens gedreht, wobei das obere, am Blendrahmen angesetzte Rahmenprofil 16 als Drehachse dient. Die beiden gegenüberliegenden Blendrahmenprofile 12, 13 bilden die außenseitige Begrenzung einer Fensteröffnung. Der im Schnitt dargestellte Spannrahmen 14 besteht aus dem unteren Rahmenprofil 15 und dem oberen Rahmenprofil 16. Diese Rahmenprofile 15, 16 sind als Hohlprofile mit innenliegenden Profilkammern ausgebildet. Zusammen mit zwei in Fig. 4 nicht sichtbaren vertikalen Rahmenprofilen bilden sie den rechteckigen Spannrahmen 14, in dem ein Gittergewebe 17 aufgenommen ist. Das Gittergewebe 17 verhindert, dass Insekten von außen in den Raum eindringen können. Der Spannrahmen 14 dichtet die Fensteröffnung im eingebauten Zustand durch eine umlaufende Bürstenleiste 18 ab. [0029] An dem unteren Rahmenprofil 15 ist ein starrer Haltewinkel 19 angebracht. Die Form und Größe des Haltewinkels 19 ist auf den Endabschnitt des Blendrahmenprofils 13 abgestimmt, so dass der Haltewinkel 19 das Blendrahmenprofil 13 im Einbauzustand hintergreift. Der Haltewinkel 19 ist durch nicht dargestellte Niete fest mit dem Rahmenprofil 15 des Spannrahmens 14 verbunden.

[0030] An dem gegenüberliegenden, oberen Rahmenprofil 16 ist der Haltewinkel 1 mit dem Federelement 2 angebracht. Das obere Rahmenprofil 16 weist auf seiner dem Blendrahmen 12 zugewandten Seite eine vorzugsweise hinterschnittene Nut auf, in die das Federelement 2 eingesetzt ist. In Fig. 4 ist das Federelement 2 im belasteten Zustand, d. h. beim Einbau, gezeigt, der der gestrichelten Darstellung von Fig. 2 entspricht. Das Herausfallen des Federelements 2 wird durch eine an dem Rahmenprofil 16 angebrachte Abdeckung 20 verhindert, die durch einen Niet 21 befestigt ist. Fig. 4 zeigt den Spannrahmen 14 beim Einsetzen in den Blendrahmen. Dazu wird der Haltewinkel 1 auf den Endabschnitt des oberen Blendrahmenprofils 12 aufgesetzt und der Spannrahmen 14 nach oben gedrückt. Dadurch wird das Federelement 2 federelastisch verformt, bis sich der in Fig. 4 dargestellte Zustand ergibt. In dieser Lage ist das untere Rahmenprofil 15 um den Federweg des Federelements 2 angehoben, so dass es mit seinem Haltewinkel 19 hinter das Blendrahmenprofil 13 gesetzt werden kann. Nach dem Loslassen des Spannrahmens 14 entspannt sich das Federelement 2 selbsttätig unter der Wirkung der in ihm gespeicherten Energie, bis es seine Ausgangslage einnimmt. Gleichzeitig wird der Spannrahmen 14 dabei wieder nach unten verschoben, so dass die Haltewinkel 1, 19 die Blendrahmenprofile 12, 13 hintergreifen.

[0031] Diese Endlage ist in Fig. 5 dargestellt. Fig. 5 zeigt den Spannrahmen 14 nach dem Einbau. In dieser Lage hat das Federelement 2 wieder seine Ausgangslage eingenommen, die der Darstellung in Fig. 2 entspricht. Das Federelement 2 kann auch so geformt sein, dass es in dieser Stellung vorgespannt ist und den Haltewinkel 1 konstant nach außen gegen das Blendrahmenprofil 12 drückt. Dadurch wird ein besonders stabiler Sitz des Spannrahmens 14 erzielt. Wie in Fig. 5 zu erkennen ist, kann das Fenster 21 nach innen geöffnet werden, ohne dass es zu einer Beeinträchtigung durch den außenseitig montierten Spannrahmen 14 kommt. Das Abnehmen des Spannrahmens 14 erfolgt umgekehrt zum Einbau. Dazu wird der Spannrahmen 14 in vertikaler Richtung nach oben bewegt, wobei das Federelement 2 verformt wird, so dass es die in Fig. 4 dargestellte Lage einnimmt. Anschließend kann das untere Rahmenprofil 15 nach außen geschwenkt und der Spannrahmen 14 abgenommen werden kann.

[0032] Fig. 6 zeigt den Eckbereich des Spannrahmens 14, der teilweise geschnitten dargestellt ist. Das vertikale und

das horizontale Rahmenprofil 16 dienen zur Halterung des Gittergewebes 17. Wie in Fig. 6 am besten zu erkennen ist, ist die Länge der abgewinkelten Endabschnitte 8, 9 des Federlements 2 auf die Größe der das Federlement 2 aufnehmenden Profilkammer des Rahmenprofils 16 abgestimmt. Der Freiraum zwischen den Endabschnitten 8, 9 und den Innenflächen des Rahmenprofils 16 ermöglicht die Bewegung des Federlements 2 beim Komprimieren, gleichzeitig wird ein Verdrehen oder Kippen des Federlements 2 verhindert. Die Abdeckung 20 weist eine rechteckige Ausnehmung 22 für den Haltewinkel 1 auf, der beim Einsetzen des Vorsatzfensters entlang der Ausnehmung 22 bewegt wird, ohne seitlich anzustoßen.

[0033] Wie aus der Seitenansicht des Rahmenprofils in Fig. 7 hervorgeht, liegt der Haltewinkel 1 in Einbaulage mit seinem waagerechten Abschnitt 5 an der Unterkante der Profilkammer des Rahmenprofils 16 an. Der Federweg des Federlements 2 entspricht daher in etwa der Breite der Profilöffnung.

[0034] Fig. 8 zeigt ein Federlement 23, das der linken Hälfte des in Fig. 1 dargestellten Federlements entspricht. Das Federlement 23 weist an seinem einen Ende einen Haltewinkel 1 auf. Dieses Ende liegt an der inneren Oberkante 26 der Profilkammer des Rahmenprofils an. Das Federlement 23 weist eine S-Form auf, so dass sein anderes Schenkelende 27 an der inneren Unterkante 25 der Profilkammer anliegt. Der abgewinkelte Endabschnitt 28 des Federlements 23 ist in einer gegengleich ausgebildeten Nut eines Gleitschuhs 24 aufgenommen. Der Gleitschuh 24 ist an die Querschnittsform der Profilkammer angepasst und kann in Längsrichtung des Profils eingeschoben werden. Nach dem Einsetzen liegt er mit seiner Oberseite an der Oberkante 26 der Profilkammer an, mit seiner Unterseite drückt er das federnde Schenkelende 27 an die Unterkante 25 an. Dadurch sind Dreh- oder Kippbewegungen des Endabschnitts 28 ausgeschlossen.

Patentansprüche

1. Vorsatzfenster zum Einsetzen in einen eine Fensteröffnung begrenzenden Blendrahmen, mit einem ein Gittergewebe aufweisenden Spannrahmen mit wenigstens einem ersten und wenigstens einem zweiten, an gegenüberliegenden Rahmenprofilen des Spannrahmens angeordneten, den Blendrahmen in Einbaulage hintergreifenden Haltewinkel, **dadurch gekennzeichnet**, dass an dem ersten und/oder zweiten Haltewinkel (1) ein sich am und/oder im Blendrahmenprofil (12) abstützendes, zum Einsetzen des Vorsatzfensters (14) elastisch verformbares Federlement (2, 23) angeordnet ist.
2. Vorsatzfenster nach Anspruch 1, dadurch gekennzeichnet, dass das Federlement (2, 23) als Blattfeder ausgebildet ist.
3. Vorsatzfenster nach Anspruch 1 oder 2, dadurch gekennzeichnet, dass das Federlement (2, 23) im Wesentlichen innerhalb einer Nut und/oder einer Profilkammer des Rahmenprofils (16) angeordnet ist.
4. Vorsatzfenster nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass das Federlement (2, 23) an gegenüberliegenden Innenflächen des Rahmenprofils abgestützt ist.
5. Vorsatzfenster nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass der Haltewinkel (1) in der Mitte oder an einem Ende des Federlements (2, 23) angeordnet ist.
6. Vorsatzfenster nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass ein Abschnitt

des Haltewinkels (1) mit der Längsachse des Federlements (2, 23) einen rechten Winkel bildet.

7. Vorsatzfenster nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass das Federlement (2) beiderseits des Haltewinkels (1) im Wesentlichen symmetrisch ausgebildet ist.

8. Vorsatzfenster nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass der erste und/oder zweite Haltewinkel (1) einstückig mit dem Federlement (2, 23) ausgebildet ist.

9. Vorsatzfenster nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass der Haltewinkel (1) mit dem Federlement (2, 23) vernietet und/oder verpresst und/oder verschweißt und/oder verklebt ist.

10. Vorsatzfenster nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass das Federlement (2, 23) in eine vorzugsweise hinterschnittene Nut des Rahmenprofils (16) eingesetzt ist.

11. Vorsatzfenster nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass das Federlement (2, 23) in eine mit einer Öffnung versehene Profilkammer des Rahmenprofils (16) eingesetzt ist.

12. Vorsatzfenster nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass an dem Rahmenprofil (16) im Bereich des Federlements (2, 23) eine eine Ausnehmung (22) für den Haltewinkel aufweisende Abdeckung (20) angeordnet ist.

13. Vorsatzfenster nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass wenigstens ein Endabschnitt (8, 9, 28) des Federlements (2, 23) im Wesentlichen rechtwinklig in Richtung der gegenüberliegenden Innenfläche des Rahmenprofils (16) abgewinkelt ist.

14. Vorsatzfenster nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass wenigstens ein Endabschnitt (8, 9, 28) des Federlements (2, 23) in einem in das Rahmenprofil (16) einschiebbaren Gleitschuh (24) gelagert ist.

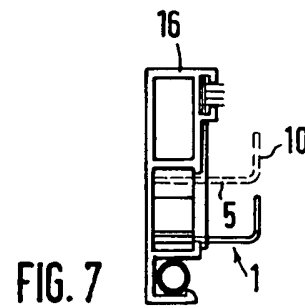
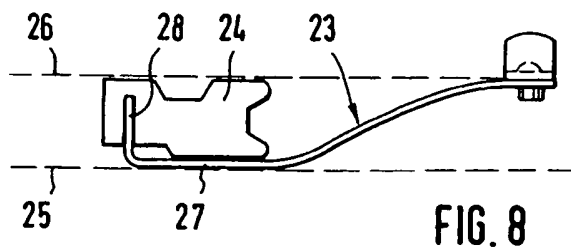
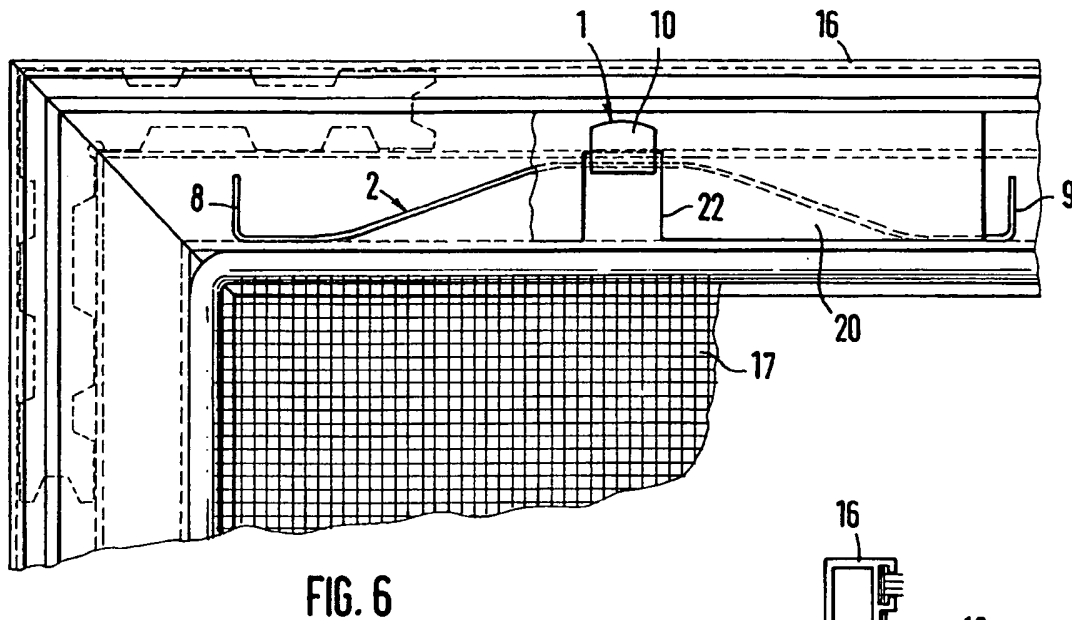
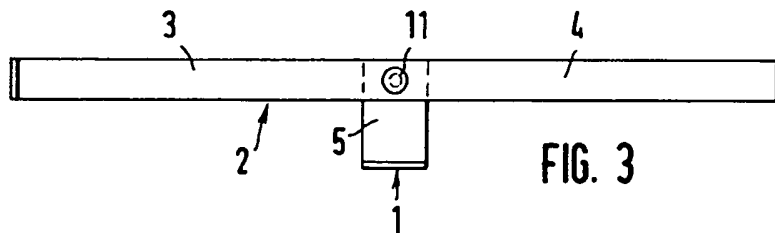
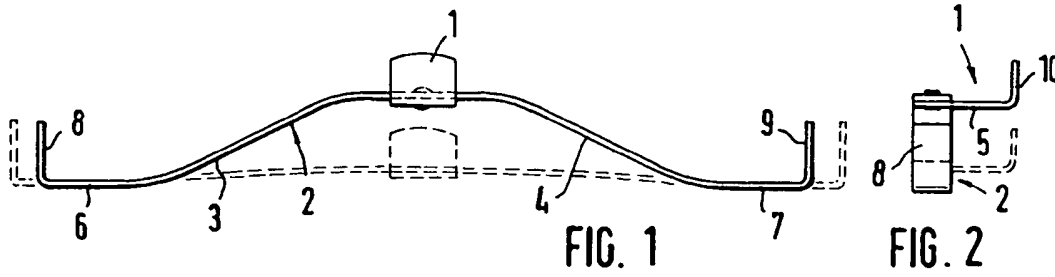
15. Vorsatzfenster nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass der Haltewinkel (1) aus Stahl herstellbar ist.

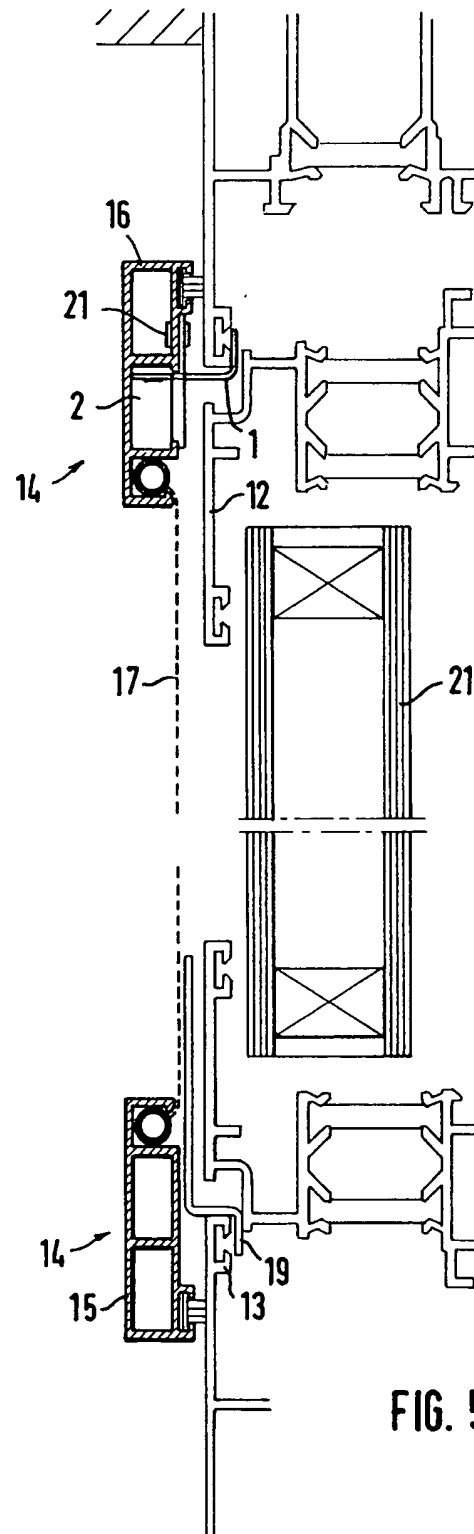
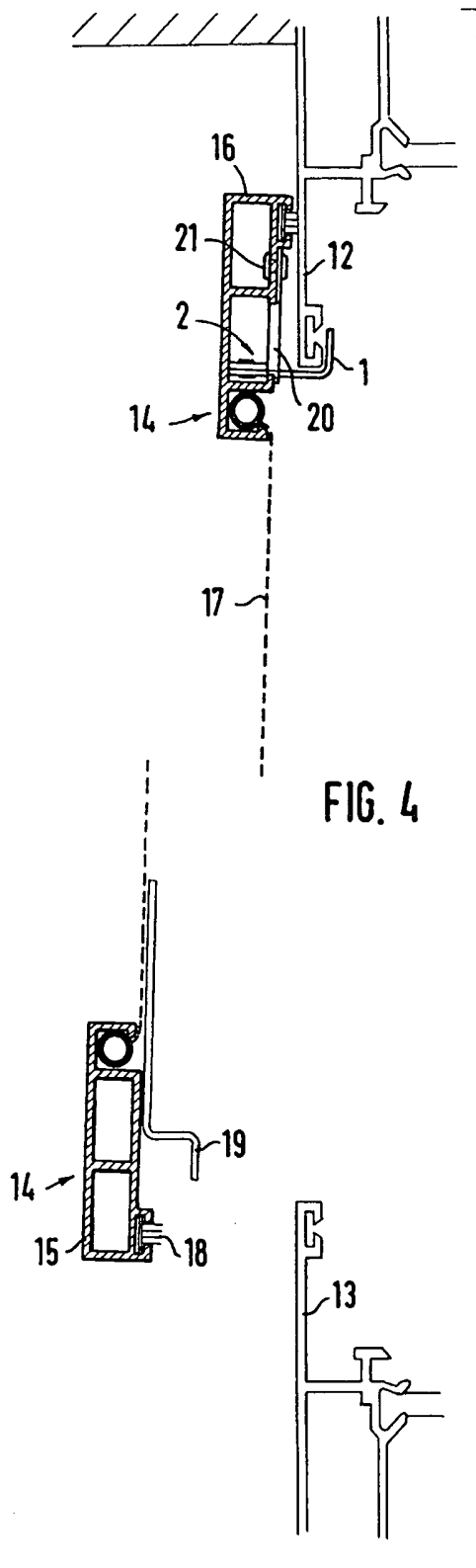
16. Vorsatzfenster nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass der Haltewinkel (1) aus einem Federmaterial herstellbar ist.

17. Vorsatzfenster nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass die ersten und/oder zweiten Haltewinkel (1) gegen die Rückstellkraft des Federlements (2, 23) zum Spannrahmen (14) hin verschiebbar sind.

18. Vorsatzfenster nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, dass es zwei erste rahmenfeste Haltewinkel (19) und zwei zweite verschiebbare Haltewinkel (1) aufweist.

Hierzu 2 Seite(n) Zeichnungen





(19)



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(54) Hor-, verduisterings- of afscheidingsinrichting.

(57) Hor-, verduisterings- of afscheidingsinrichting omvattende een raamwerk dat losneembaar in een kozijn van een raam of een deur bevestigd kan worden, en een in het raamwerk bevestigd horrengaas, verduisterings- of afscheidingsmateriaal, met het kenmerk, dat het horrengaas, verduisterings- of afscheidingsmateriaal in het raamwerk beweegbaar is bevestigd, zodanig dat deze beweegbaar is tussen een open en een gesloten toestand.

NL C 1023743

De inhoud van dit octrooi komt overeen met de oorspronkelijk ingediende beschrijving met conclusie(s) en eventuele tekeningen.

HOR-, VERDUISTERINGS- OF AFSCHIEDINGSINRICHTING

De uitvinding heeft betrekking op een hor-, verduisterings- of afscheidingsinrichting omvattende een raamwerk dat
5 losneembaar in een kozijn van een raam of een deur bevestigd kan worden, en een in het raamwerk bevestigd horrengaas, verduisterings- of afscheidingsmateriaal..

Een dergelijk inrichting is bekend, bijvoorbeeld in de vorm
10 van een inzethor, en is beschreven in NL 1013151 en NL 1018466. Een nadeel van dergelijke systemen is dat het vermoeiend is om het raamwerk telkens uit het kozijn te verwijderen indien de gebruiker geen gebruik meer van de hor wenst te maken, wat vooral bij grotere afmetingen een rol
15 speelt. Ook is de kans op beschadiging aanwezig.

De uitvinding beoogt een systeem dat eenvoudiger in het gebruik is, en/of waarbij de kans op beschadiging minder is.

20 Daartoe is het horrengaas, verduisterings- of afscheidingsmateriaal beweegbaar in het raamwerk bevestigd, zodanig dat deze beweegbaar is tussen een open en een gesloten toestand. Op die wijze hoeft het raamwerk niet meer verwijderd te worden als de hor, of de verduistering of
25 afscheiding tijdelijk niet meer nodig is. Voor langere periodes, bijvoorbeeld in de winter voor horren, kan echter het raamwerk in zijn geheel worden verwijderd en het systeem worden opgeborgen.

30 In een eerste voorkeursuitvoering is het horrengaas, verduisterings- of afscheidingsmateriaal volgens het principe van een rolgordijn beweegbaar.

In een tweede voorkeursuitvoering is het horrengaas, verduisterings- of afscheidingsmateriaal volgens het principe van een harmonica beweegbaar.

- 5 In een derde voorkeursuitvoering maakt het horrengaas, verduisterings- of afscheidingsmateriaal deel uit van een deur of raam dat scharnierbaar in het raamwerk is bevestigd.

- 10 Bij voorkeur is het horrengaas, verduisterings- of afscheidingsmateriaal in een tweede raamwerk bevestigd, welk tweede raamwerk losse regels en stijlen omvat die in het eerste raamwerk zijn bevestigd.

- 15 Bij voorkeur omvat het raamwerk bevestigingsmiddelen waarmee het raamwerk in het kozijn kan worden bevestigd. Bij voorkeur omvatten deze bevestigingsmiddelen veermiddelen waarmee het raamwerk in het kozijn kan worden geklemd.

- 20 De uitvinding wordt hieronder verder toegelicht aan de hand van figuren die schematisch een uitvoeringsvoorbeeld van een hor volgens de uitvinding weergeven. Het zal de vakman duidelijk dat een verduisterings- of afscheidingsinrichting volgens een zelfde constructie kan worden verkregen door in plaats van horrengaas bijvoorbeeld lichtondoorlatend of juist
25 transparant materiaal te gebruiken. Om het begrip van de figuren te vergemakkelijken worden voor dezelfde of vergelijkbare onderdelen in verschillende figuren dezelfde nummers gebruikt.

- 30 Fig. 1a toont een dwarsdoorsnede van een kozijn terwijl daar een hor volgens de uitvinding in wordt geplaatst.

Fig. 1b toont dezelfde dwarsdoorsnede als fig. 1a nadat het inzetten van de hor voltooid is.

Figuren 1a en 1b tonen een (inzet)hor 1, die een, in dit
5 geval rechthoekig, raamwerk 20 omvat dat bestaat uit een
linkerstijl 2 (de rechterstijl 2 is niet weergegeven), een
bovenregel 3, een onderregel 4 en een opstaande rand 5 om de
omtrek van het raamwerk. De rand 5 verhindert dat de hor door
de opening waarin de hor 1 van binnen uit geplaatst wordt
10 naar buiten valt. Tussen de regels 3,4 is, door middel van
inrolpezen 6,7, een gaas 8 gespannen.

In de bovenregel 3 is een klem- en/of klikelement 9
aangebracht. Zoals in meer detail is weergegeven in fig. 2,
15 omvat dit klikelement 9 een vlak gedeelte of plaat 10 en
gaten 11 voor bevestiging, door middel van schroeven of
dergelijke, van het klikelement 9 aan de bovenregel 3. Het
klikelement 9 omvat voorts een bladveer 12 die is voorzien
van een lip of greep 13 en een sleuf 14. Onder de bladveer 12
20 bevindt zich
een kunststof nok 15 die door middel van een stelschroef 16,
die door de sleuf 14 steekt, tegen de onderzijde van de blad-
veer 12 wordt getrokken.

25 In figuren 1a en 1b zijn beide regels 3,4 voorzien van een
opening voor het doorlaten van een nok 15. Aan de binnenzijde
van beide regels 3,4 is een klem- en/of klikelement 9
bevestigd, waarbij de nok 15 door de genoemde opening steekt.

30 De hor 1 kan op verschillende manieren in de getoonde
vensteropening tussen een bovendorpel 17 en een onderdorpel
18 geplaatst worden. Zo kan de hor in de vensteropening

geschoven worden tot beide nokken 15 tegen het kozijn
aanliggen. Door
een voorwaartse beweging van de hor 1 worden de nokken 15 te-
gen de werking van de bladveren 12 in naar binnen gedrukt
5 tot- dat het hoogste punt van de nokken 15 bereik is. Daarna
wordt de hor 1 praktisch naar binnen getrokken door de
veerkracht van de bladveren 12 en klikt de hor 1 vast.

Ook kan, zoals getoond in fig. 1a, de onderste nok 15 over de
10 onderdorpel 18 geplaatst worden, waarna de bovenste nok 15
langs de bovendorpel 17 wordt gedrukt. In beide gevallen
wordt de situatie verkregen zoals getoond in fig. 1b.

De hor 1 kan uit de vensteropening verwijderd worden door
15 eenvoudig aan de rand 5 te trekken (hiertoe kunnen eventueel
handvatten op de rand 5 gemonteerd worden) of, bij voor-
keur, door de grepen 13 en daarmee de nokken 15 naar binnen
te trekken en de klem- en/of klikverbinding op te heffen.

20 Uit het bovenstaande en uit de figuren zal duidelijk zijn dat
de hor zonder veel speling in het kozijn van een af te
schermen opening geplaatst kan worden. Ook bij gebruik van
bijvoorbeeld stijlen die tekort zijn zal de speling gering
zijn en zal een eventuele opstaande rand nog steeds voor een
25 effectieve afdichting zorgdragen. Voorts is zowel het
aanbrengen als het verwijderen van de hor eenvoudig en zonder
veel kracht of behendigheid uit te voeren.

Indien de stijlen en regels van de hor voldoende dunwandig en
30 diep zijn kan, bij gebruik van de onderhavige hor in vensters
en deuren die gedeeltelijk door het kozijn of de deurpost
heen steken, het venster of de deur nog steeds gesloten
worden. Ook is het mogelijk de hor om een kozijn, venster,

deur of dergelijke te klemmen en/of te klikken in plaats van erin. De nokken zijn in dat geval naar de binnenzijde van het raamwerk gekeerd.

- 5 Het geheel van plaat 10, bladveer 12 en greep 13 wordt bij voorkeur uit een enkele plaat van een veerkrachtige materiaal, zoals roestvrij verenstaal of een veerkrachtige kunststof, gevormd. Ook de gaten 11 voor bevestiging van het element 9 en de sleuf 12 kunnen met dezelfde matrijs en
- 10 tijdens dezelfde proces stap vervaardigd worden. Het getoonde klem- en/of klikelement 9 is daarnaast voorzien van inkepingen 19, die mogelijk maken dat de bladveer 12 over een hoek van 90 graden t.o.v. de plaat 10 wordt verbogen zonder dat de bladveer 12 lager komt te liggen dan de onderrand van
- 15 de plaat 10. Hierdoor vergt het element 9 minder ruimte bij het inbouwen in een raamwerk.

- De nok 15 kan van tanden of een ruw oppervlak voorzien worden om de wrijving met een kozijn of dergelijke te
- 20 verhogen. Hierdoor wordt de greep van de hor 1 op bijvoorbeeld een houten kozijn of een kozijn waarvan de dorpels niet naar buiten toe divergeren aanzienlijk verbeterd.

- 25 De nok 15 kan op een verende element zoals een bladveer of dergelijke gemonteerd worden maar kan daarnaast of in plaats daarvan van een veerkrachtig materiaal vervaardigd zijn. Eén of meer nokken kunnen dan bijvoorbeeld met eenvoudige middelen, zoals een spijker, schroef of popnagel, op de
- 30 buitenzijde van één of meer van de stijlen of regels van het raamwerk gemonteerd worden.

In plaats van de getoonde variant die is voorzien van ten minste twee veerkrachtige nokken, is het vanzelfsprekend ook

mogelijk een veerkrachtige eerste nok op een eerste stijl of regel te gebruiken in combinatie met een tweede, niet veerkrachtige nok van een harder materiaal op bijvoorbeeld een tegenover gelegen stijl of regel. De nok van het hardere
 5 materiaal wordt dan tegen of om een stijl of dorpel van een kozijn geplaatst waarna de veerkrachtige nok tegen of om een tegenover gelegen stijl of dorpel wordt geklemd of geklikt.

Er zijn vele andere denkbare manieren om een raamwerk 20 in
 10 een kozijn te plaatsen en losneembaar te bevestigen, bijvoorbeeld zoals beschreven in octrooipublicaties NL 1013151 en NL 1018466. De hier beschreven manieren dienen derhalve slechts als illustratie.

15 Volgens Fig. 3 omvat de (inzet)hor 1 een raamwerk 20. In het raamwerk 20 is in dit geval echter een tweede raamwerk 22 met een rolhor 23 bevestigd. De rolhor 23 heeft een constructie en kan worden geopend en gesloten op de zelfde wijze als op zichzelf bekende rolgordijnen. In Fig. 5 is in dwarsdoorsnede
 20 schematisch aangegeven dat het tweede raamwerk 22 met de rolhor 23 in het eerste raamwerk 20 wordt aangebracht. Dit tweede raamwerk kan bestaan uit losse stijlen en regels die bijvoorbeeld met dubbelzijdig kleefband in het eerste raamwerk 20 kunnen worden bevestigd. Het raamwerk 20 bestaat
 25 uit een profiel met stijlen 2 en regels 3 welke een rechthoekig venster vormen, met een opstaande buitenwaarts gerichte rand 5 en een opstaande binnenwaarts gerichte rand 25 waarop het tweede raamwerk 22 wordt bevestigd. Afhankelijk van de plaatsing van de hor 1 aan de binnen- of buitenzijde
 30 van het kozijn 21, en de vorm en het type van het kozijn 21, zijn de opstaande randen 5, 25 aan de zelfde zijde of aan verschillende zijdes van het raamwerk 2, 3 aangebracht, of

heeft het profiel een andere, aan het kozijn 21 aangepaste, vorm.

Zoals in Fig. 4 is getoond kan bijvoorbeeld ook een
5 harmonica 24 in het tweede raamwerk 22 zijn aangebracht.
Voorts is het bijvoorbeeld mogelijk om in het raamwerk 20 of
22 scharnierbare ramen of deuren aan te brengen. De
uitvinding heeft derhalve in het algemeen betrekking op
losneembaar in een kozijn bevestigde horren, gordijnen en
10 dergelijke, die in genoemde bevestigde positie van een open
naar een gesloten toestand kunnen worden gebracht, en weer
terug.

Zoals hierboven al genoemd is, hebben de termen "stijlen" en
15 "regels" betrekking op respectievelijk de (in hoofdzaak)
verticale en de (in hoofdzaak) horizontale verbindingdelen
van een raamwerk dat is aangebracht in een af te schermen
opening, bijvoorbeeld een deur- of vensteropening. Dergelijke
verbindingdelen worden voorts onder meer aangeduid als
20 latten, ribben, balken en profielen.

De uitvinding is niet beperkt tot het in de tekening
weergegeven en in het voorgaande beschreven uitvoeringsvoor-
beeld dat op verschillende manieren binnen het kader van de
25 uitvinding kan worden gevarieerd.

CONCLUSIES

1. Hor-, verduisterings- of afscheidingsinrichting (1) omvattende een raamwerk (20) dat losneembaar in een
5 kozijn (21) van een raam of een deur bevestigd kan worden, en een in het raamwerk (20) bevestigd horrengaas, verduisterings- of afscheidingsmateriaal (23), met het kenmerk, dat het horrengaas, verduisterings- of afscheidingsmateriaal (23) in het raamwerk (20)
10 beweegbaar is bevestigd, zodanig dat deze beweegbaar is tussen een open en een gesloten toestand.
2. Inrichting volgens conclusie 1, met het kenmerk, dat het horrengaas, verduisterings- of afscheidingsmateriaal (23)
15 volgens het principe van een rolgordijn beweegbaar is.
3. Inrichting volgens conclusie 1, met het kenmerk, dat het horrengaas, verduisterings- of afscheidingsmateriaal (23)
20 volgens het principe van een harmonica beweegbaar is.
4. Inrichting volgens conclusie 1, met het kenmerk, dat het horrengaas, verduisterings- of afscheidingsmateriaal (23)
deel uitmaakt van een deur of raam dat scharnierbaar in het raamwerk (20) is bevestigd.
25
5. Inrichting volgens een van de voorgaande conclusies 1-4, met het kenmerk, dat het horrengaas, verduisterings- of afscheidingsmateriaal (23) in een tweede raamwerk (22) is bevestigd, welk tweede raamwerk losse regels en stijlen
30 omvat die in het eerste raamwerk (20) zijn bevestigd.
6. Inrichting volgens een van de voorgaande conclusies 1-5, met het kenmerk, dat het raamwerk (20)

bevestigingsmiddelen (8, 9) omvat waarmee het raamwerk (20) in het kozijn (21) kan worden bevestigd.

7. Inrichting volgens een van de voorgaande conclusies 1-5,
5 met het kenmerk, dat de bevestigingsmiddelen (8, 9) veermiddelen omvat waarmee het raamwerk (20) in het kozijn (21) kan worden geklemd.

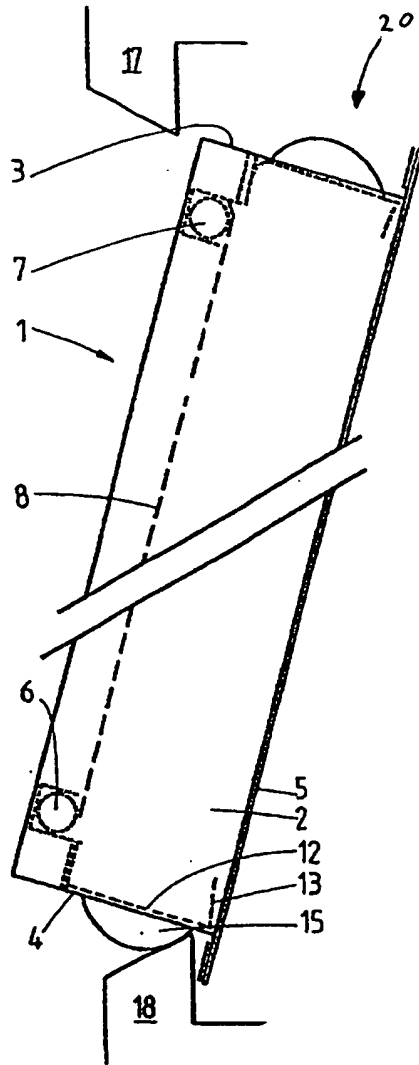


FIG. 1A

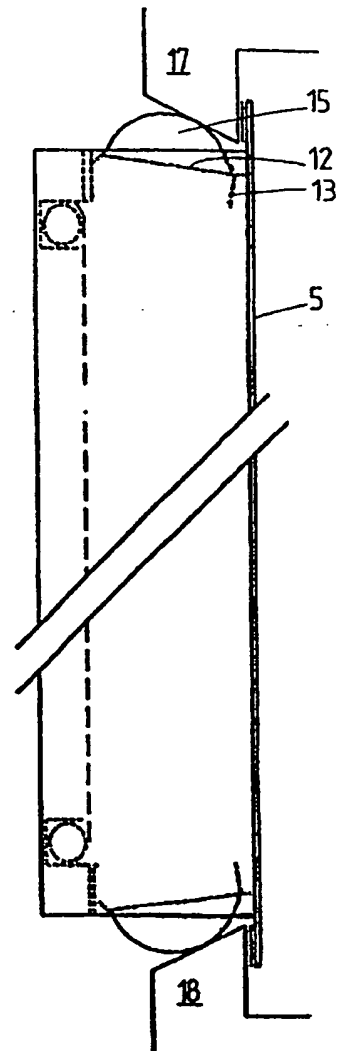


FIG. 1B

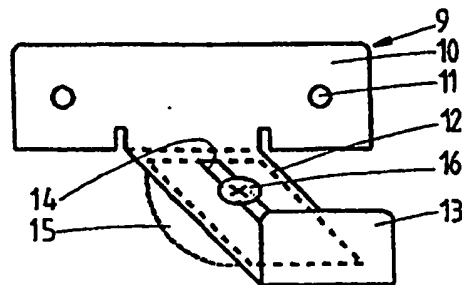


FIG. 2

2/2

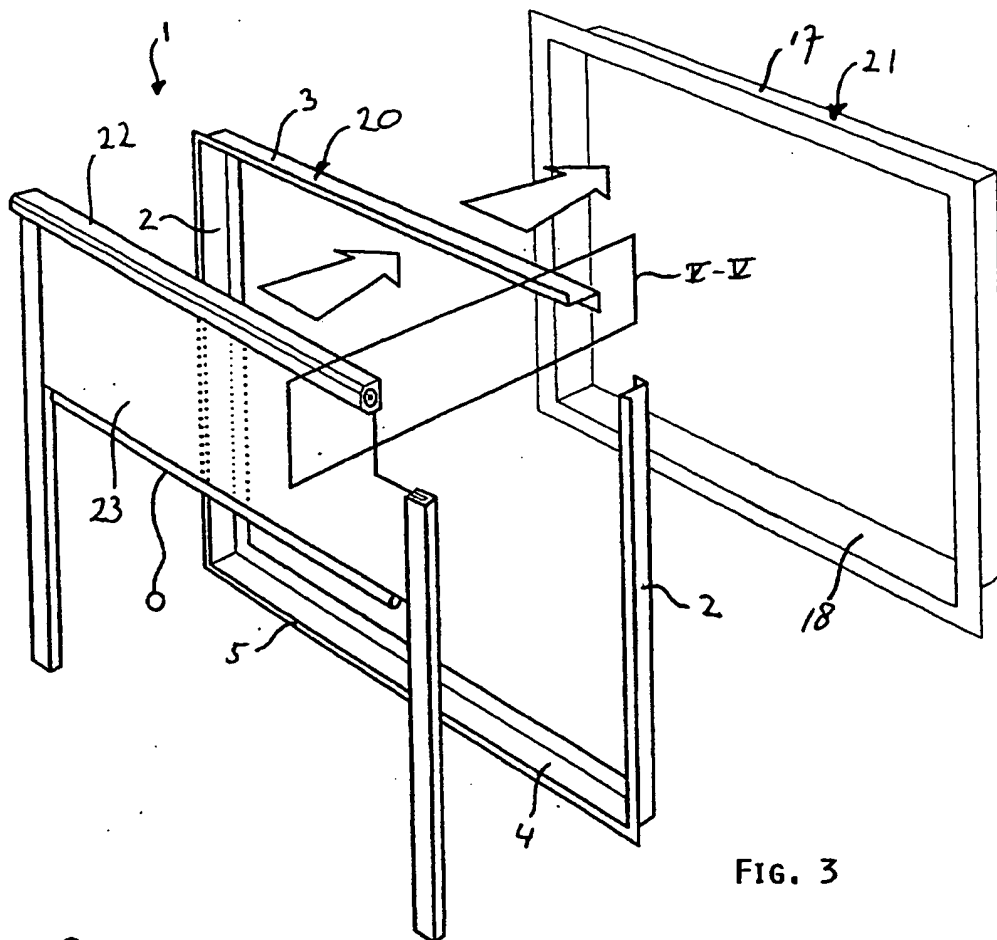


FIG. 3

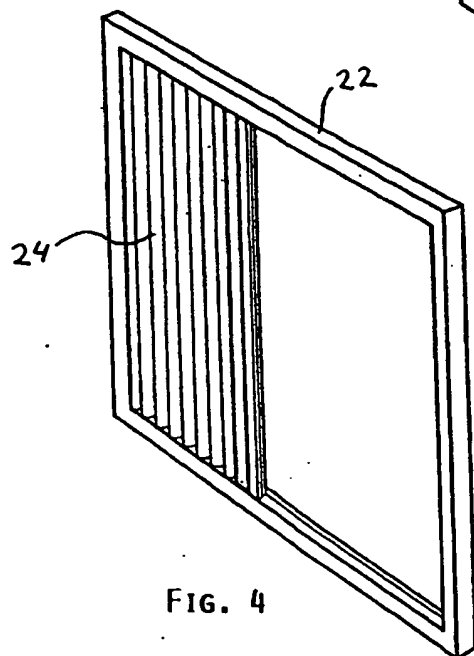


FIG. 4

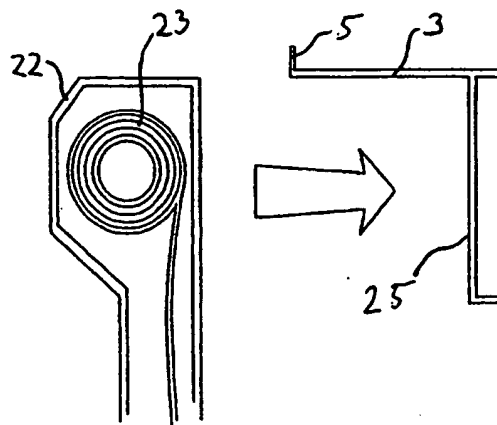


FIG. 5

SAMENWERKINGSVERDRAG (PCT)

RAPPORT BETREFFENDE NIEUWHEIDSONDERZOEK VAN INTERNATIONAAL TYPE

IDENTIFICATIE VAN DE NATIONALE AANVRAGE		KENMERK VAN DE AANVRAGER OF VAN DE GEMACHTIGDE 3. 2AJ86	
Nederlands aanvraag nr. 1023743		Indieningsdatum 25 juni 2003	
		Ingeroepen voorrangsdatum	
Aanvrager (Naam) Oskam, Jan Pieter			
Datum van het verzoek voor een onderzoek van internationaal type		Door de instantie voor Internationaal Onderzoek (ISA) aan het verzoek voor een onderzoek van internationaal type toegekend nr. SN41872NL	
I. CLASSIFICATIE VAN HET ONDERWERP (bij toepassing van verschillende classificaties, alle classificatiesymbolen opgeven)			
Volgens de internationale classificatie (IPC) Int.Cl: E06B9/40 E06B9/54			
II. ONDERZOCHE GEBIEDEN VAN DE TECHNIEK			
Onderzochte minimum documentatie			
Classificatiesysteem	Classificatiesymbolen		
Int.Cl.7:	E06B		
Onderzochte andere documentatie dan de minimum documentatie, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen			
III. <input type="checkbox"/> GEEN ONDERZOEK MOGELIJK VOOR BEPAALDE CONCLUSIES (opmerkingen op aanvullingsblad)			
IV. <input type="checkbox"/> GEBREK AAN EENHEID VAN UITVINDING (opmerkingen op aanvullingsblad)			

VERSLAG VAN HET NIEUWHEIDSONDERZOEK VAN
INTERNATIONAAL TYPE

Nummer van het verzoek om een nieuwheidsonderzoek

NL 1023743

A. CLASSIFICATIE VAN HET ONDERWERP
IPC 7 E06B9/40 E06B9/54

Volgens de Internationale Classificatie van octrooien (IPC) of zowel volgens de nationale classificatie als volgens de IPC.

B. ONDERZOCHETE GEBIEDEN VAN DE TECHNIEK

Onderzochte minimum documentatie (classificatie gevolgd door classificatiesymbolen)

IPC 7 E06B

Onderzochte andere documentatie dan de minimum documentatie, voor dergelijke documenten, voor zover dergelijke documenten in de onderzochte gebieden zijn opgenomen

Tijdens het internationaal nieuwheidsonderzoek geraadpleegde elektronische gegevensbestanden (naam van de gegevensbestanden en, waar uitvoerbaar, gebruikte trefwoorden)

EPO-Internal, WPI Data, PAJ

C. VAN BELANG GEACHTE DOCUMENTEN

Categorie *	Geciteerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
X	FR 2 449 193 A (MARITON YVES) 12 September 1980 (1980-09-12)	1-4,6,7
Y	bladzijde 2, regel 9 - regel 28; figuren 1,2	5
X	EP 0 870 896 A (MEDALDUE S R L) 14 Oktober 1998 (1998-10-14) kolom 2, regel 10 -kolom 3, regel 30; figuren 1-3	1,2,4,6,7
X	WO 01 69031 A (MEDALDUE S R L ;MINGRONE PIETRO (IT)) 20 September 2001 (2001-09-20) kolom 2, regel 10 -kolom 3, regel 30; figuren 1-3	1,2,4,6,7
	-/--	

☒ Verdere documenten worden vermeld in het vervolg van vak C.

☒ Leden van dezelfde octrooifamilie zijn vermeld in een bijlage

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- *E* eerder document, maar gepubliceerd op de datum van indiening of daarna
- *L* document dat het beroep op een recht van voorrang aan twijfel onderhevig maakt of dat aangehaald wordt om de publicatiedatum van een andere aanhaling vast te stellen of om een andere reden zoals aangegeven
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- *&* document dat deel uitmaakt van dezelfde octrooifamilie

Datum waarop het nieuwheidsonderzoek van internationaal type werd voltooid

25 Februari 2004

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De bevoegde ambtenaar

Severens, 6

VERSLAG VAN HET NIEUWHEIDSONDERZOEK VAN
INTERNATIONAAL TYPE

Nummer van het verzoek om een nieuwheidsonderzoek

NL 1023743

C. (Vervolg). VAN BELANG GEACHTE DOCUMENTEN

Categorie *	Gediteerde documenten, eventueel met aanduiding van speciaal van belang zijnde passages	Van belang voor conclusie nr.
X	DE 37 00 745 A (WAREMA RENKHOFF GMBH & CO KG) 21 Juli 1988 (1988-07-21) kolom 4, regel 29 - kolom 5, regel 50; figuur 1	1,3,4
Y	FR 2 805 565 A (ROLLER S A) 31 Augustus 2001 (2001-08-31) figuren 4-6	5

**VERSLAG VAN HET NIEUWHEIDSONDERZOEK VAN
INTERNATIONAAL TYPE**

Informatie over leden van dezelfde octrooifamilie

Nummer van het verzoek om een nieuwheidsonderzoek

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In het rapport genoemd octroolgeschrift	Datum van publicatie	Overeenkomend(e) geschrift(en)	Datum van publicatie
FR 2449193	A	12-09-1980	FR 2449193 A1 12-09-1980
EP 0870896	A	14-10-1998	IT 80970065 U1 12-10-1998
			EP 0870896 A1 14-10-1998
			ES 2163821 T3 01-02-2002
WO 0169031	A	20-09-2001	IT 8020000033 U1 17-09-2001
			IT MI20010517 A1 12-09-2002
			AU 4454101 A 24-09-2001
			WO 0169031 A1 20-09-2001
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FR 2805565	A	31-08-2001	FR 2805565 A1 31-08-2001

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(54) CADRE DE MOUSTIQUAIRE COULISSANT A COMPARTIMENT PORTE-ROULEAU INTEGRE

(54) SCREEN FRAME WITH INTEGRAL ROLL SCREEN COMPARTMENT



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CA 2542245 A1 2003/04/22

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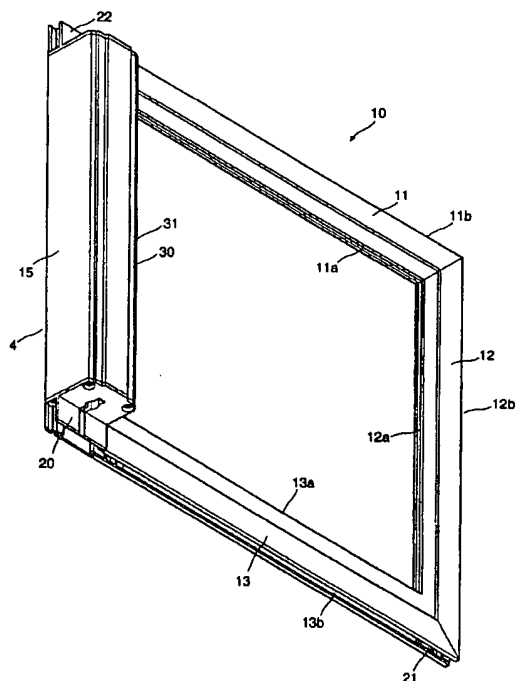
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(54) Titre : CADRE DE MOUSTIQUAIRE COULISSANT A COMPARTIMENT PORTE-ROULEAU INTEGRE
(54) Title: SCREEN FRAME WITH INTEGRAL ROLL SCREEN COMPARTMENT



(57) Abrégé/Abstract:

A sliding screen frame for a closure assembly, said frame comprising framing sections assembled to form the screen frame, one of said frame sections being adapted to contain a roll out screen, said roll out screen being slideable between a fully extended position, whereat the screen is substantially payed out from said roll, and a fully retracted position; wherein the screen frame is free to slide in the closure assembly whether the roll screen is at the fully extended or the fully retracted position.

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OPIC · CIPQ 191



ABSTRACT

A sliding screen frame for a closure assembly, said frame comprising framing sections assembled to form the screen frame, one of said frame sections being adapted to contain a roll out screen, said roll out screen being slideable between a fully extended position, whereat the screen is substantially payed out from said roll, and a fully retracted position; wherein the screen frame is free to slide in the closure assembly whether the roll screen is at the fully extended or the fully retracted position.

TITLE OF THE INVENTION

SCREEN FRAME WITH INTEGRAL ROLL SCREEN COMPARTMENT

5

FIELD OF THE INVENTION

This invention relates to screens for closure assemblies and in particular for patio doors and windows.

10

BACKGROUND OF THE INVENTION

In the art there exists numerous devices which provide screening to prevent insects from entering open windows and patio doors. These screening devices may be placed in position within a channel provided with the frame sections of typical window or door assemblies with the screen of a predetermined thickness so as to easily fit within the channel. Patio door screens may be slideable in a channel on a track assisted by rollers and moveable to and from the position wherein the screen blocks the opening when the door is in the open position and prevents insects from entering the dwelling, to a position away from the opening wherein the screen does not block the opening

15

20

More recently, roll out screen assemblies have been provided which include after-market products which are permanently fixed in position on or near an exterior

- 2 -

frame section adjacent to the door opening. At this position when desired the screen may be rolled out from its housing at fixed position and extend across the door opening when the door is in an open position. The screen of course may be accumulated on a roller in the housing and thereby provide the occupant with a clear view of their yard. But such a construction has difficulty in providing an adequate barrier to insects. They are unsightly and are also costly and may be beyond the level of skill for a homeowner installation.

Other efforts therefore have been made to make roll screen constructions more invisible and yet functional. Such constructions may be found in Applicant's prior granted patent, United States Patent No. 6,267,168 which teaches the use of a roll screen cassette contained within a framing section of a closure assembly which provides guides in the header and sill frames for the leading edge of the roll screen. This construction improves the barrier against insects but raises other issues. Applicant is also aware of United States Patent No. 6,167,936 that addresses a similar concept. However, such hidden constructions do require that the window frames be manufactured to required specifications to include a void wherein the roll screen may be inserted. Conceptually these patents provide a valuable approach but in one respect from an economic standpoint they require that existing window constructions be re-tooled for the required framing sections with the void for the hidden screen. Most manufacturers do not want to do this because of the cost of moulds and dies. There is therefore, still an unmet need yet unsatisfied which

- 3 -

provides a screen construction which does not require an extensive amount of re-tooling.

Attempts have been made to provide roll screen constructions within its own frame
5 for fastening to an existing window or door frame; for example, United States Patent
No. 5,479,979; United States Patent No. 6,082,432; and finally United States Patent
No. 6,070,642. Particularly referring to United States Patent No. 6,070,642 as by way
of example, there is taught a roll screen assembly which has a support frame which
is fixed into position with the upper member (30), as best seen in Figures 1 and 2,
10 including a compartment wherein the roll screen accumulates and pays out. The
entire frame section therefore is fixed into position upon a typical frame for a door or
a window which is adapted to the existing framing structure proximate the inner
peripheral of the window or door frame. The roll screen frame is permanently fixed
in position therefore and does not utilize any existing mounting portions available
15 with the homeowners windows or doors. Further in the case of a patio door the roll
screen frame does provide an obstacle at the threshold which will be discussed
hereinafter.

Another example is found in such a fixed structure in relation to United States Patent
20 No. 6,082,432 wherein the roll screen frame, as best seen in Figures 1 and 2, is fixed
in position and the roll screen is also fixed in position within the chamber
compartment (40) on the brackets (41 and 46) wherein the screen pays out and
accumulates. The handle portion or as it is referred to in the patent, the pulling

- 4 -

posts (25) extends across the frame portions (28 and 28b) which are positioned in fixed relationship to span the door. Nothing within the reference teaches that the frame section supporting the roll screen may also move in relation to the door in a sliding motion as is with a typical planar screen door for a patio door (which typical
5 screen does not include a roll screen component).

Some of the problems experienced with these prior art constructions include, with respect to the roll out doors, that a framing section is provided at the threshold of the assembly. This is true, for example, for screen doors manufactured by the Phantom
10 Manufacturing Limited under the trademark "PHANTOM"TM and by Monroe Tool and Die, and/or KSG Products for "MIRAGE"TM door screens. Typically, these products resemble United States Patent No. 6,082,432 and require supplementary frame sections that extend around the door assembly which provide the obstacle adjacent to the threshold of the assembly. When the roll out screen is accumulated
15 into the roll tube housing, the threshold remains as an obstacle to block the egress of an individual and particularly for those using wheel chairs, walkers and the like. People without particular challenges may simply step on the threshold obstacle and disform it to prevent the screen from rolling out and requiring an expensive repair. Further, such installations require expensive labour for installation and may be quite
20 expensive in comparison to a typical sliding screen door which is not fixed in position.

- 5 -

Applicant is also aware of a product SCREEN AWAY™ for retractable roll screen assemblies manufactured by Superior Building Products which provides such a device which includes approximately 18 to 24 parts and 22 steps involved in assembling the kit of components provided. Although the product may be
5 esthetically pleasing once assembled the threshold obstacle is evident which must be present to provide support for the leading edge of the roll screen as it moves across the opening.

However, a typical known sliding screen frame, for installation adjacent a patio
10 door, when positioned across the patio door opening blocks the occupants view of the yard and may be esthetically displeasing. If the screen door is slid to the opposite position away from the opening then the opposite glass pane is obstructed as well.

15 None of the prior art constructions identified above known to Applicants addresses the issue which Applicants' current invention focuses in upon. That is with all of the knowledge of those designing roll out screen assemblies which are bolted in place whether or not in a frame, none of the inventors including Applicant's prior construction take advantage of the existing channels and tracks within windows and
20 patio doors to allow for simplicity of installation to easily fit known constructions for windows and patio doors.

- 6 -

Applicant therefore is providing a roll screen frame construction, which is standardized at its perimeter to mate and interfit with well known channels, tracks and hardware. In doing so the present roll screen design makes replacement and installation much simpler. In spite of the numerous efforts made to provide an acceptable roll screen for windows and doors there still remains a long felt need left unaddressed in the art for a roll screen assembly which may be simply and easily installed by the homeowner. Nowhere within the prior art is such a roll screen frame provided which may be merchandized as an OEM as well as an after-market product and which will fit the same constraints provided with windows and doors such as for example the well known planar screen frame which slides in a track in a frame adjacent to a patio door. These particular known frames are inexpensive.

It is therefore a primary object of the invention to provide a roll screen frame construction, which is standardized at its perimeter to mate and interfit with existing well known channels, tracks and hardware for windows and doors.

It is yet another object of this invention to provide a sliding screen frame with integral roll screen housing which frame may be slid across the opening of a closure frame and which frame is also used to support the free end of the roll out screen as well.

It is another object of the invention to make such a roll out screen assembly affordable.

- 7 -

It is yet a further object of the invention to provide a screen assembly in a fully assembled or alternative knock down kit form which is easy to assemble and/or install.

5

It is yet a further object of the invention to provide a screen assembly which may be provided as a kit of components.

It is yet a further object of the invention to provide a screen assembly which is cost effective.

10

Further and other objects of the invention will become apparent to those skilled in the art when considering the following summary of the invention and the more detailed description of the preferred embodiments illustrated herein.

15

SUMMARY OF THE INVENTION

Reference to a roll screen assembly within this specification is to be defined as also including any screen construction which pays out from and returns to a housing whether a roll screen installed with or without a roll tube, or whether the screen is pleated in an accordion like fashion or the like or any other similar screen construction without limitation. When the term screen is utilized its is intended that

20

- 8 -

other matrices such as shades, blinds, and screens whether transparent , opaque, mesh or the like is implied without limitation.

According to a primary aspect of the invention there is provided a screen frame
5 construction, preferably a roll screen, comprising framing sections and a screen
housing from which a screen is payed out and accumulated, said frame sections
being adapted proximate the outer perimeter side to interfit with, preferably existing
well known, channels, tracks and hardware for windows and doors, and said frame
sections being adapted proximate the inner side to provide a guide for the screen as
10 it is payed out from the housing .

According to yet another aspect of the invention there is provided a sliding screen
frame comprising framing sections and a screen housing from which a screen is
payed out and accumulated, wherein said frame sections are adapted proximate the
15 outer perimeter side to interfit with the track of the closure assembly to enable the
screen frame to be slid across the opening of the closure assembly and the frame
sections also being adapted to support the free end of the screen.

According to yet another aspect of the invention there is provided a sliding screen
20 frame for a closure assembly, said screen frame being moveable between a position
wherein the screen frame is in an opening blocking position to second position
wherein one is free to pass through the door opening, said screen frame comprising
framing sections having two sides, and a housing wherein a screen is contained and

- 9 -

payed out , preferably a roll out screen, said framing sections having two sides, a first side adapted to receive the free end of the screen, and the other side adapted to engage with channels, tracks, hardware or the like of the closure assembly, wherein said screen has a free end being moveable across the screen frame from an accumulated position within the housing, and preferably disposed on a roll, to a fully payed out extended position, the free end of the screen riding within the first side of the framing section.

According to yet another aspect of the invention there is provided a preferably slideable screen frame for a closure assembly, said frame comprising framing sections and a housing for paying out and accumulating a screen, and preferably a roll screen, said framing sections have a first and second side, the screen being moveable and guided by the first side of the framing sections between a fully extended position, whereat the screen is substantially payed out from said housing, and a fully retracted position within the housing; wherein the screen frame is adapted, proximate the second side of the framing section, to engage with and preferably slide in the, preferably existing channel, track or hardware disposed with closure assembly whether the screen is at the fully extended or the fully retracted position.

20

According to yet another aspect of the invention there is provided a sliding screen frame comprising frame members including an integral roll out screen housing, said frame members being adapted to allow said frame to slide across a closure frame as

- 10 -

well as providing a support for the free end of the roll out screen. In one embodiment said frame includes rollers or wheels preferably located proximate the top and/or bottom of the frame to assist with the sliding motion of the screen frame across the closure frame opening. Preferably the rollers or wheels are included with
5 a support bracket for supporting the roll screen in said housing. In one embodiment the preferred bracket may also include a section to engage the frame member proximate the corners to assemble the members into the screen frame and to house the roller for movement on the track of header and sill of the closure assembly. Preferably the bracket also includes supports within the brackets opposite the rollers
10 or wheels to engage the roll tube of the roll screen.

It is not necessary in all embodiments that the screen frame be slideable within conventional constructions such as channels, tracks, and the like. The essence of the invention is therefore that the screen frame includes framing sections and a screen
15 housing, and that each section includes an inner portion adapted to be used as a guide for the free end of the screen and an outer portion adapted to engage with and in one embodiment slide in the preferred existing channel, track or hardware disposed with closure assembly whether the screen is at the fully extended or the fully retracted position.

20

The invention therefore also includes a frame member for a screen frame including a housing from which a screen is payed out and accumulated, said member comprising a first portion adapted for engagement with, preferably conventional

- 11 -

existing, window and door frame hardware, channels, tracks and the like; and a second portion adapted to guide the free end of the screen.

Therefore, to these ends according to another aspect of the invention, there is
5 provided a kit of components for a screen frame comprising framing members, a screen housing, and a screen contained in and payed out from said housing, said framing members being firstly adapted engage with, preferably conventional existing, window and door frame hardware, channels, tracks and the like; and also being adapted to guide the free end of the screen. The first adaptation of the frame
10 members is to provide engagement of the screen frame of the present invention with known constructions which presently engage known screens for doors, windows and patio doors, 1) such as a typical rail used with patio doors which includes a rail or the like which engages a sliding mechanism, usually a roller; or 2) such as a typical lift out screen arrangement for windows including a generally u-shaped
15 flange for acceptance of a screen frame; or 3) such as a typical casement screen channel with engagement pins which are rotated out of position to allow screen removal; wherein the present invention is like the prior art constructions not permanently attached which can be readily replaced and attached by a home owner. Therefore a kit of components may be provided which includes the framing sections
20 and the housing and roll screen which may be assembled to provide the above-mentioned screen frame. Of course the screen frame may also slide which has been described above. This however, is not absolutely necessary. The need that is being satisfied is that the present invention allows for replacement of existing screens

- 12 -

using the same channels, rails and/or hardware provided for existing assemblies wherein the present invention is adapted to fit those channels, rails and/or hardware allowing the home owner the ease of installation without providing the requirement of an expensive installer and retro fitted parts.

5

According to yet another aspect of the invention there is provided a support bracket for a roll screen which comprises a support for said roll screen proximate one end of the bracket and an integral mounting part for a roller or wheel proximate the other end of the bracket. Preferably the bracket may be made from nylon, plastic, Delrin®

10 or the like.

The framing members may be formed from nylon, plastic, steel, aluminum, fiberglass, PVC or the like by any conventional method including roll forming, pultrusion, extrusion, CNC fabrication, with no limitation being implied whatsoever.

15

When the term conventional and or existing hardware, channels, tracks or the like is used in this specification with reference to the various aspects of the invention described above it is implied that such hardware, channels, and tracks are utilized to secure existing planar screens found in windows, doors, patio doors and other

20 closure assemblies whether existing, replacement or original assemblies such as but not limited to tilt and slide windows, casement windows, double hung windows, awning windows, pivoting doors, and patio doors. Further it is intended that the screen assembly of the various embodiments of the invention may be easily and

- 13 -

simply placed or dropped into position with a minimum of effort without requiring fastening in position with the exception of rotating or retracting a holding pin or the like or making a tension adjustment to the roller. Conventionally hardware channels and/or tracks or the like are located with the various assemblies discussed above to
5 allow this simple installation. The homeowner can therefore use conventional existing hardware for installation of the various embodiments of the present invention or alternatively if desired can provide replacement hardware which may be of any compatible shape or configuration or which may engage the conventional hardware or alternatively may replace it. Simplicity of replacement or installation is
10 the key for our screen assembly.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of the frame section in a patio door illustrated in a
15 preferred embodiment of the invention.

Figure 1A is a similar view to that of Figure 1 for a window assembly.

Figures 2 and 2A are exploded perspective views of the frame section of Figure 1 and
20 1A.

Figures 3 and 3A are cross sectional views of the frame section 13 and 113 of Figures 1 and 1A illustrated in preferred embodiments of the invention.

Figures 4 and 4A are perspective views of the sections of Figures 3 and 3A.

Figure 5 is a cross sectional view of the cover portion (14) illustrated in Figures 1 and
5 1A.

Figures 6, 7, 8 and 9 and 6A, 7A, 8A, and 9A are top and bottom front and rear
perspective views of the bracket portions (22) and (122) as seen in Figures 2 and 2A
and illustrated in preferred embodiments of the invention.

10

Figures 10 and 10B are cross sectional views of the screen assembly of Figures 1 and
1A providing details with respect to the operation thereof and illustrated in
preferred embodiments of the invention.

15 Figures 10A and 10C are close up cross sectional views of the bottom end of Figures
10 and 10B indicating the details thereof.

Figures 11 and 11C are partially exploded schematic views of the assembly of
Figures 1 and 1A illustrated in preferred embodiment of the invention.

20

Figure 11A is a further exploded schematic view of Figure 1.

Figures 11B and 11D are substantially totally exploded schematic views of the assembly of Figures 1 and 1A.

Figure 12 A, B, C, are a series of prior art hardware and planer screen schematic
5 views for various closure assemblies.

Figure 13 A, B, C, are a series of schematic views of various embodiments of the invention in engagement with similar hardware to that of Figure 12 but incorporating Applicants' invention.

10

Figure 14 is a schematic view indicating the manner in which the screen is attached to the handle and the tube illustrated in one embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

15

Although the following description focuses on a patio door screen, it is not intended that the invention be limited in this aspect. The invention also may be embodied with other doors, windows, or the like. Those skilled in the art will recognize these other uses without limitation.

20

Referring generally to the figures, there is illustrated a screen frame assembly (10) which includes a screen housing (14) and frame sections (11, 12, and 13) making up the frame (10). The assembly (10) slides within an opening of a closure assembly

- 16 -

such as a patio door. The sliding action of the screen frame (10) is accomplished by sliding the screen frame along the edges (11b and 13b) within tracks or channels normally found within a patio door assembly. These channels are found in the sill and the header of the door assembly. The screen frame (10) therefore moves as is known in prior art sliding constructions. However, integral with the framing section (10) is a compartment (15) within which is found a spring biased roll screen assembly. As best seen in Figure 2, the leading edge (31) of the screen (30) travels within the inside edges (13a and 11a) of the frame portions (11 and 13) to and from a fully accumulated position wherein the screen is accumulated on the roll tube which will be described hereinafter, to a fully extended position wherein the leading edge (31) is located proximate the channel portion (12a) adjacent the interior of section (12) which screen edge (31) may be latched and/or locked in position. Whether the screen (30) is at the fully accumulated or the fully extended position, the entire screen assembly (10) may be slid across the patio door opening. In this manner, the screen is slid out of a position where it might block the threshold to an occupant. This allows passage of wheel chairs, walkers and the like in a simple manner and overcomes one of the problems in the art.

As best seen in Figure 3 and 4 the portion (13b) of section (13) has opening (b) therein to be received in standard sized channels or rails provided in the sill and header frames of the track assembly. The leading edge of the screen (31) will slide or be guided via guide (G) within the section (13a) within channel (a) thereof as

- 17 -

described above and hereinafter to assist motion of the leading edge (31) of the screen (30).

Rollers (R) may be provided with the brackets (21 and 20) at mounting slots (20d) and (21d) which rollers travel within the sill track. They also may be provided for brackets (22) and (23) for the header. The bracket portions (20, 21, 22 and 23) also provide channel portions (20a, 21a, 22a and 23a) which marry within the track portions of the closure assembly and which assist with the assembly of the screen frame 10. As seen in Figure 11a leg portions (d) and (f) for brackets (20 and 22) and (21 and 23) respectively interfit in channels (b), (d') and (b') respectively to assemble the frame sections (11, 12 and 13) with the housing (14). The brackets also provide extensions for example, track portion (13b) and providing a channel (b) to receive the track disposed within the sill and header of the rails normally provided. The roller (R) therefore is spring biased as is known to accommodate various tensions. Release pins may be provided, as is known, within the legs of brackets (21 and 23) to allow installation and replacement of the screen frame in a similar manner as conventional planer screen frames, which are known in the art. The brackets (22 and 20) support the roll screen assembly (S) therebetween mounted on a tube. The tube has a slot in it to receive one end of the screen with the other end of the screen being proximate the exit from the tube housing (15) as best seen in Figure 14 at (15c). The brackets (20 and 22) as best seen in Figures 6, 7, 8 and 9 have holes therein for aligning with holes (y) within the housing (14) to align the portion (22z) with portion (15b) and receipt of threaded screws. The mouth (15c) therefore of the cover (15) allows for the free end

- 18 -

(31) of the screen assembly (30) to extend therefrom. Locking portions (22c) provide locking of the roller tube in position.

When fully assembled the screen assembly (10) therefore can replace an existing
5 sliding screen utilizing the same channels of the existing patio door. This enables the homeowner to effect the replacement without the need for an experienced installer or add on supplementary components. No assembling is required. The screen assembly 10 merely drops into the existing channels.

10 As can be seen from the Figures, the present invention resembles the well-known prior art sliding patio door screen in that it may be slid from a position where it fully covers the door opening to a position where it does not. However, it clearly has the added advantage in that the screen may be accumulated on the roller when the entire frame is at the first position so that it does not block the view of the occupants
15 when the patio door is in fact closed. However, when the patio door is open, the roll screen may be extended to the fully extended position and latched thereat so as to prevent insects from entering the dwelling. However, when an occupant wishes to exit the dwelling, the patio screen assembly (10) may be slid in a conventional manner so as to not obstruct the threshold as is the case with prior art structures
20 discussed in the background of the invention. The framing sections (11, 12, 13 and 14) may be made from aluminum extrusions or the like, and the brackets (20, 21, 22 and 23) may be manufactured from nylon or other resins. Section 14 may be an aluminum extrusion as well.

The entire assembly may be provided in a kit of components wherein all of the framing sections (10, 11, 12, 13 and 14), brackets (20, 21, 22 and 23) housing (14) and the roller screen assembly may be provided in the kit which may be easily
5 assembled. When compared to the prior art constructions of PHANTOM™ or MIRAGE™, instead of the typical 22 steps in order to provide such a prior art construction which typically is done by an expensive installer, the present roll out screen will be marketed for substantially the same price as the well-known standard sliding planer screens in various consumer outlets and may be used to replace
10 standard screens when they are in need of repair.

Further Applicants may utilize the flexible screen connectors of Figure 14 in the screen assembly (10) as taught in its prior patent technology referenced above, using a roll tube having a compatible detent therein and handle portion having compatible
15 detent therein for receiving the flexible T-shaped connector at each end of a screen cloth which may therefore may accommodate easy screen replacement. It is required that the same dimensions (length, width and thickness) be utilized for the threshold and header track engaging framing portions (11 and 13) as those which are standard at the present date. This will allow for easy replacement of the
20 conventional planer screen with the present invention. As is taught in Applicant's prior invention the tube may be tensioned by the means as disclosed therein.

- 20 -

Referring now to Figure 10, 10a, 11, 11a, 11b, and 14 there is illustrated the assembly (10) of Figure 1 engaging top rail (R_T) bottom rail (R_B) proximate the top thereof (L). Conveniently therefore the sections (11) and (13) are provided having openings or channel sections as best seen in Figures 3 and 4 at (11a) and (11b) and (13a) and (13b) which as best seen in Figure 11 defining the top and bottom sections of the screen assembly (10) which now includes the housing for the roll out screen (S) and the frame sections (11) and (13) which includes an upper and a lower section or profile (11a) and (11b), (13a) and (13b) respectively. The inside portions (11a) and (13a) are for the receipt of the legs (d) and (f) of the brackets (20, 21, 22 and 23) to close the frame sections and integrate the entire assembly by attaching the housing and roll screen thereto. Clearly, as can best be seen in Figure 10A the roller (R) engages the rail (R_B) proximate the top thereof (L) in a conventional manner, said roller being provided with the brackets (21 and 20) and preferably (23 and 22) as previously described in relation to Figure 2. The patio screen assembly (10) will therefore be free to roll upon the rails (T, R and B) in a conventional manner. However, the sections (11 and 13) also include sections (13a and 11a) for receipt of and the carriage of the guide (G) for the handle (H) of the screen assembly accumulated on the tube (T) advanced via handle (H) to the guides (11a and 13a) to proximate the section opening of (12a) where at the handle may be latched. The latch is not illustrated nor described and would be as is known. The brackets therefore in combination with the framing sections (11, 12, and 13) provide, along with housing (14), an integrated screen frame which will slide along the known rails in a patio door closure assembly with the guides (G) attached to handle (H) via the legs which extend upwardly and

- 21 -

downwardly into the opening provided in the handle with the handle being engaged with the T section shown in Figure 14 at (S2) attached to the screen and the handle at (305y) and to the tube at (305x) via T section (S1). As seen in Figure 11b the tube is attached to bushings (B1 and B2) which are subsequently attached to the pins provided with each bracket (20 and 22) to allow for the rotation of the tube. The bushings therefore provide for the pivoting of the tube while the spring is attached to the pivot (20b and 22b) and allows for pre-winding of the roller screen to a pre-determined tension to ensure that it will return to its fully accumulated position.

Referring now to Figures 12 and 13 there is illustrated examples of the various forms which the present invention may take without intending any limitation being derived by the reader in providing these examples. With regard to Figure 12 there is illustrated corresponding sections found in prior art installations typical for a slider window, for example A, wherein a channel is provided within which a typical screen frame fixed in position. However, the screen frame blocks the view of the individual as it is permanently placed in position until such time as it is removed. As seen in Figure 13A, the present invention provides for a combination of the screen including a frame which engages the same channel section in the prior art window of Figure 12A, and yet provides with the same frame section, the movement of the roll screen to and from the housing (14) to allow for the occupant to have the screen in place when the window is open and have the screen out of view when the window is closed. This may be accomplished utilizing the same window channel provided in known window and typically slider window constructions.

- 22 -

Referring now to Figure 12B, there is illustrated a typical rail of a patio door having a section (L) which engages a roller attached to a frame section which also has permanently installed therewith a screen. With regard to Figure 13B, the present invention includes and provides with the framing section and the assembly 10, as seen and described in relation to the prior figures, a roller within section (13b) which engages the known rail (L) within channel section (13b), and wherein in addition the free end (31) of the roll screen is movable within the channel (13a) of Section 13. The same advantages are described in relation to Figure 13A and are realized therefore as well with the patio door screen embodying the invention. The screen frame may roll on the rail (L) and the screen may be guided to and from an accessible position to a position wherein the screen is out of view.

Referring now to Figure 12C or 12D there is illustrated a typical casement window planer screen which is attached to a framing section permanently and would permanently block the view of an occupant through the casement window. The planer screen is released via a pin release in Figure 12C or with a pivot pin in Figure 12D moved in the directions indicated. Utilizing the same channels and stops therefore the present invention in Figures 13C and 13D provide for placing of a casement screen of the present invention in exactly the same manner as with the prior art constructions with the additional combination heretofore unknown of the framing section (13") including portions (13"b) for engaging the known hardware

- 23 -

within the frame section and section (13"a) for providing for the guiding channel of the free end of a roll out screen assembly which has been integrated therewith.

As is normally required it is highly recommended that sealing portions (not shown)
5 be provided for sections 12 and housing 14 disposed along the entire outside vertical edges thereof.

Referring now to Figures 1A, 2A, 3A, 4A, 6A, 7A, 8A, 9A, 10B, 10C, 11E and 11D there is illustrated the screen assembly (100) similar in all respects to screen assembly
10 (10) as previously described with the difference being that the screen assembly (100) does not roll or slide within a track. The screen assembly (100) which includes sections (111, 112, 113) and housing (114) supported on brackets (120 and 122) and further assembled with the assistance of brackets (121 and 123) consistent with the previous patio door example, and utilizing the similar bracket (122) for example in
15 Figure 6A and 7A which includes a leg (122x) which will be inserted within the framing sections (113 and 111) to assist with the assembly of the embodiment. As best seen in Figure 11D and 11E the conventional u-shaped section (200) is provided in a window assembly frame to which the window screen (100) will engage in a manner as shown in relation to Figure 10B and 10C consistent with previously
20 described patio door embodiment with the section (200) being engaged by the leg (122b) of the window screen (100) having a roll screen as seen in Figure 11E contained within the housing (114) identical to Figure 11A in all respects except that it is now a window screen as opposed to a patio door screen. Therefore, Figures

- 24 -

11B and 11E are comparable and the reader is referred thereto for like parts, and the operation thereof with the exception of the sliding. The descriptions are very much the same. The essence therefore, is that the window screen assembly (100) will interfit within the frame section (200) provided adjacent the header and sill of a window closure assembly with the invention (100) including the roll out screen within housing (114) being guided via guides (g) within frame elements (111a and 113a) to and from the accumulated and the employed position. When the window screen requires replacement or repair, it can easily be removed from the channel (200), repaired or replaced by dropping the new screen or repaired screen in position.

The window embodiment of window screen (100) may also be utilized with the other examples provided in Figures 13A, B and C. A man skilled in the art would understand what minor modifications would have to be made to do so.

15

Therefore, in essence the present invention provides for a combination of features heretofore unknown allowing for installation of the various forms of the invention within the hardware and channel portions already provided with known window constructions, patio door constructions, and casement window constructions. The illustrations and descriptions in relation to Figures 12 and 13 are for illustrative purposes only and in no way limit the invention.

- 25 -

As many changes can be made to the preferred embodiments of the invention without departing from the scope thereof. It is intended that all matter contained herein be considered illustrative of the invention and not in a limiting sense.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE AS FOLLOWS:

1. A support bracket for a roll screen having two ends, comprising a support for said roll screen proximate one end of the bracket and an integral roller mounting part proximate the other end of the bracket.

2. A support bracket for use in a sliding screen frame assembly, said assembly having framing sections and a screen housing for a roll screen having two ends, said framing sections being adapted proximate the outer perimeter side to interfit with a track,

said support bracket comprising a support for said roll screen proximate one end of said bracket and an integral roller mounting part proximate the other end of said bracket, said integral roller mounting part also being adapted to interfit with said track.

3. The bracket of claim 2 further comprising a first connector means for securing said bracket to one of said framing sections and a second connector means for securing said bracket to said housing.

4. The bracket of claim 2 wherein said support for said roll screen comprises an elongated member extending away from said bracket, said elongated member adapted to be insertable into the opening of one end of said roll screen.

5. The bracket of claim 4 wherein said elongated member has locking portions disposed thereon.

6. The bracket of claims 3, 4 or 5 wherein said first connector means comprise a leg portion that is insertable into the end of said framing sections proximate the

outer perimeter side, said leg portion also being adapted to interfit with said track, whereby said leg portions and framing sections are both movable together over said track.

7. The bracket of claims 4, 5 or 6 wherein said elongated member is substantially cylindrical.

8. A support bracket for use in a screen frame assembly, said frame assembly including framing sections and a screen housing for a roll screen, said framing sections being adapted proximate the outer perimeter side to engage with channel, track or hardware portions disposed with a closure assembly,

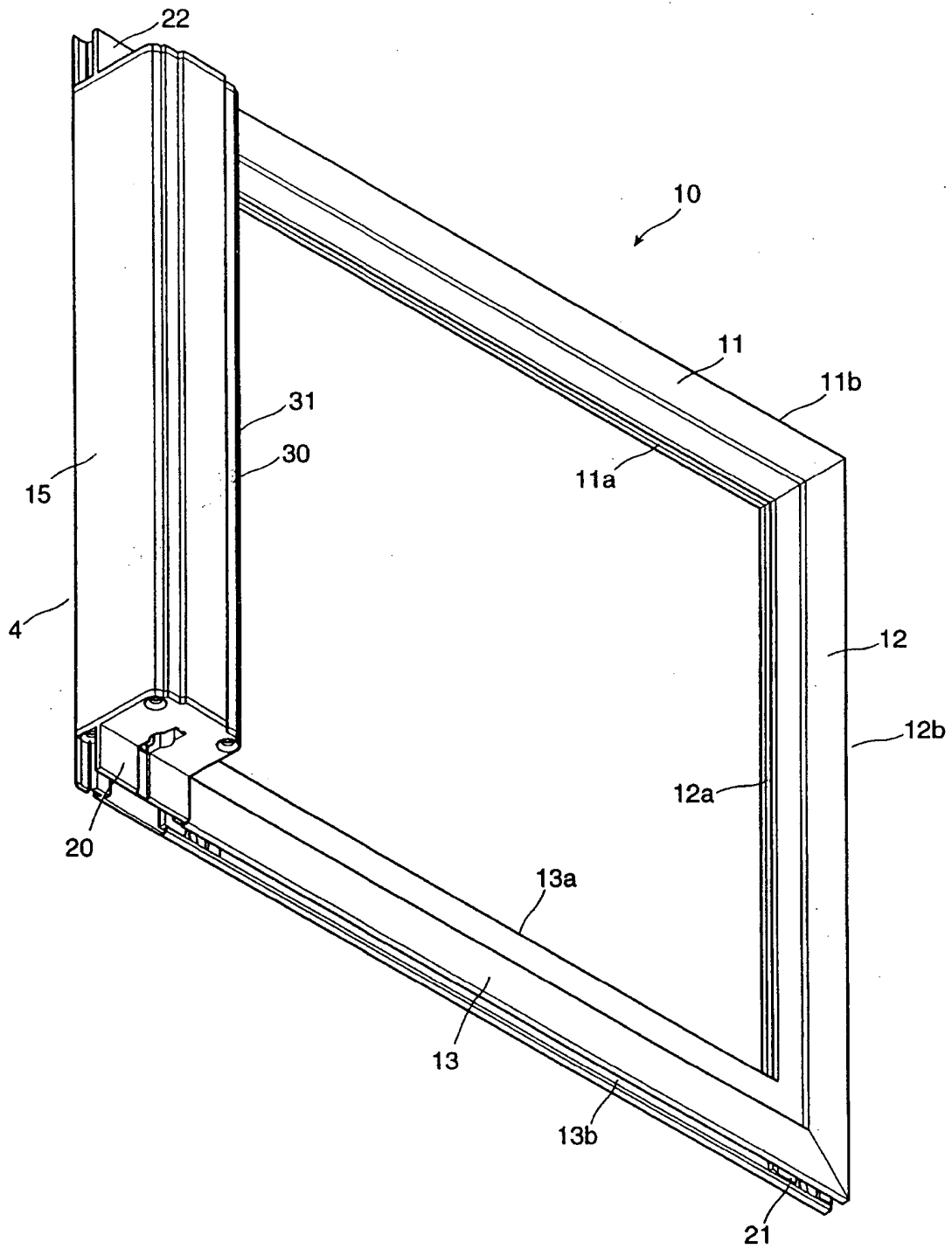
said support bracket comprising a support for said roll screen proximate one end of said bracket and the other end of said bracket being adapted to engage with said channel, track or hardware portions.

9. The bracket of claim 8 further comprising a first connector means for securing said bracket to one of said framing sections and a second connector means for securing said bracket to said housing.

10. The bracket of claim 8 or 9 wherein said first connector means comprises a leg portion that is insertable into the end of said framing sections proximate the outer perimeter side, said leg portion also interfitting with said channel, track or hardware portions.

11. The bracket of claims 8, 9 or 10 wherein said support for said roll screen comprises an elongated member extending away from said bracket, said elongated member adapted to be insertable into the opening of one end of said roll screen.

12. The bracket of claim 11 wherein said elongated member has locking portions disposed thereon.
13. The bracket of claim 11 or 12 wherein said elongated member is substantially cylindrical.
14. The bracket claims 1 to 9 wherein the material from which said bracket is made is selected from nylon, plastic, and Delrin®.

**Figure 1**

2/22

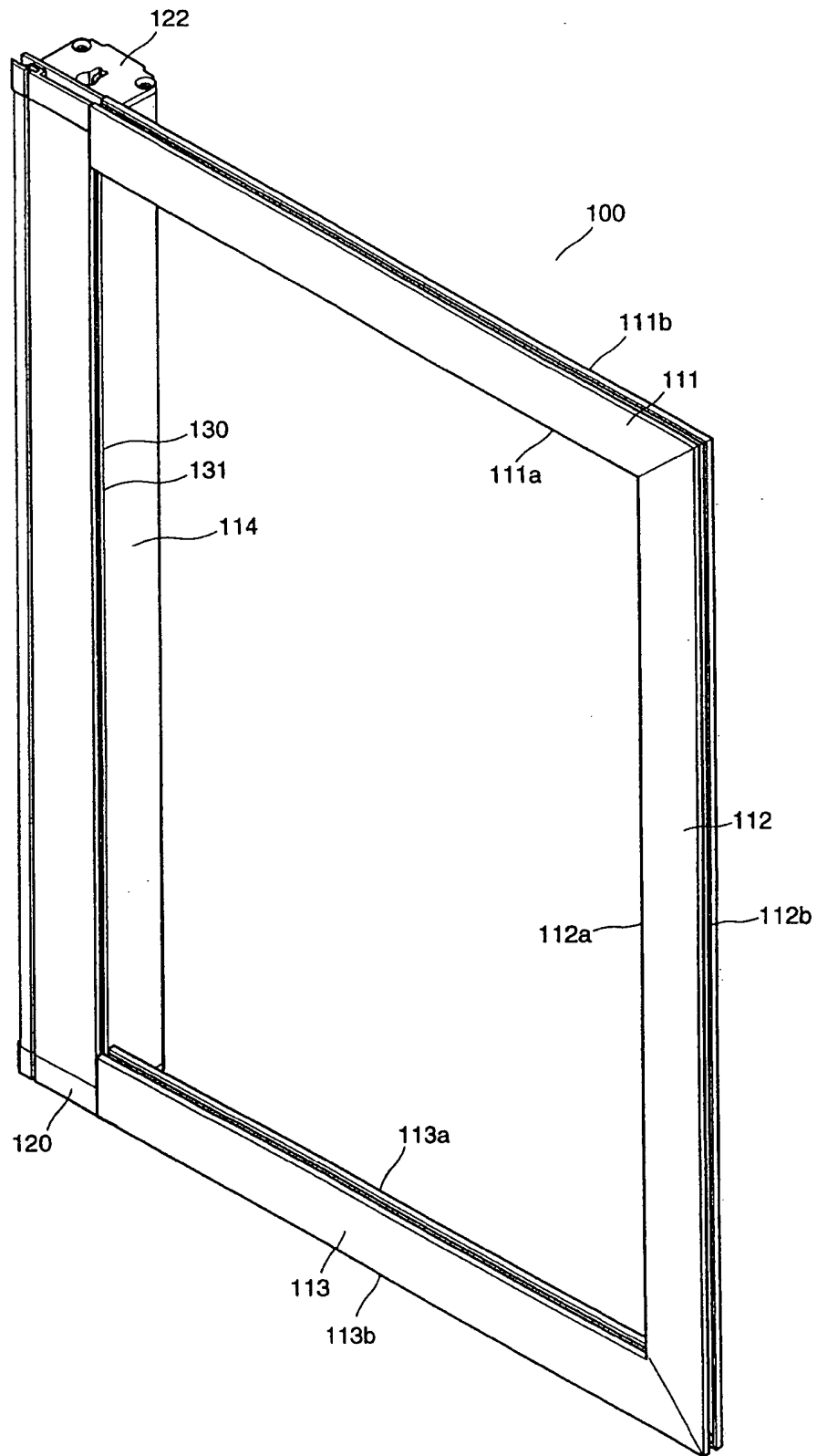


Figure 1A

4/22

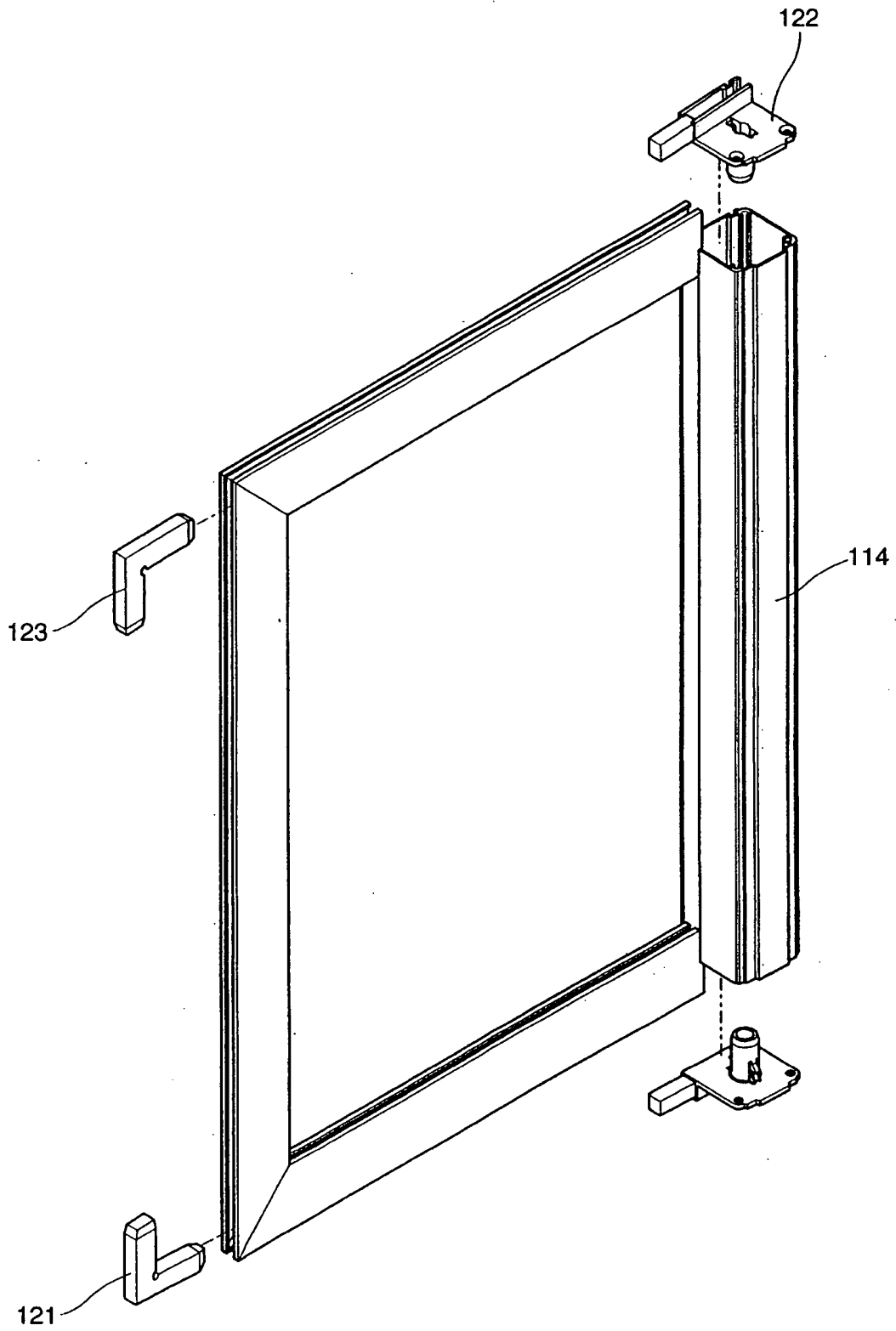


Figure 2A

5/22

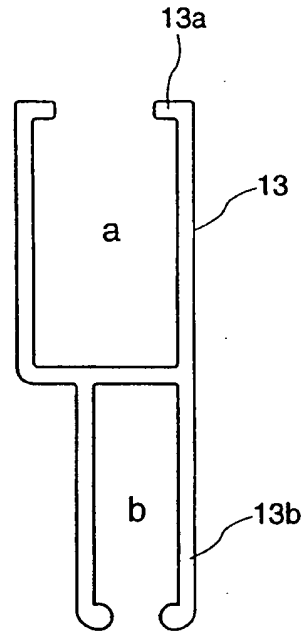


Figure 3

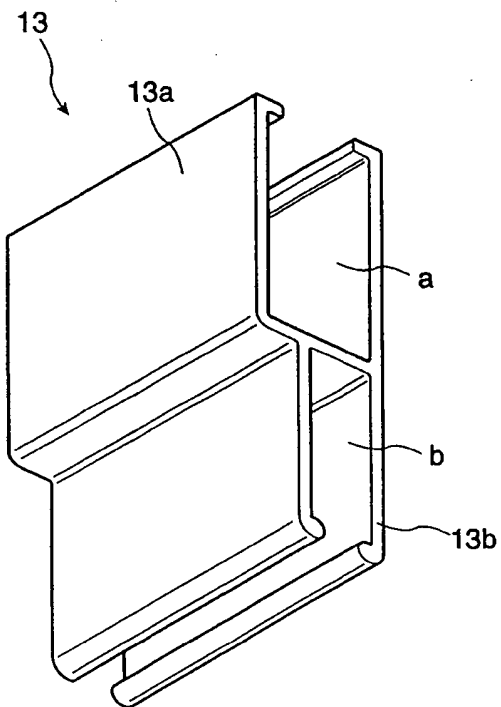


Figure 4

6/22

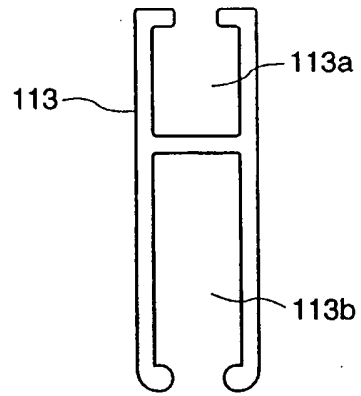


Figure 3A

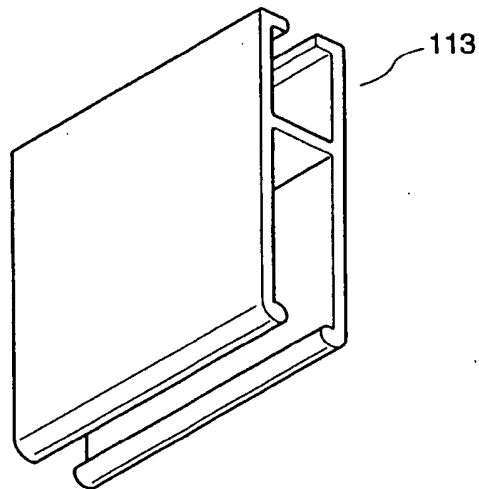


Figure 4A

7/22

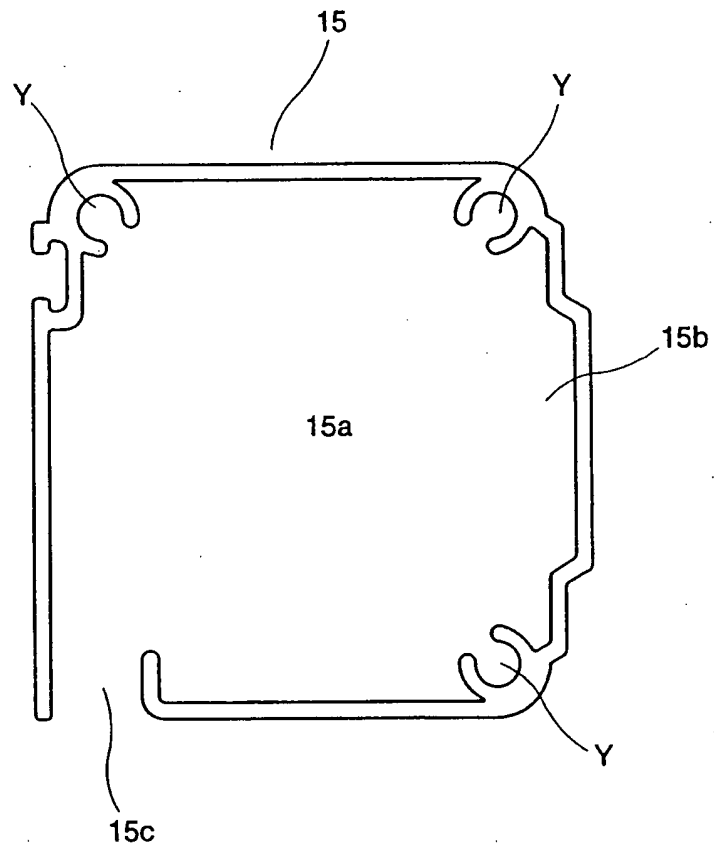


Figure 5

8/22

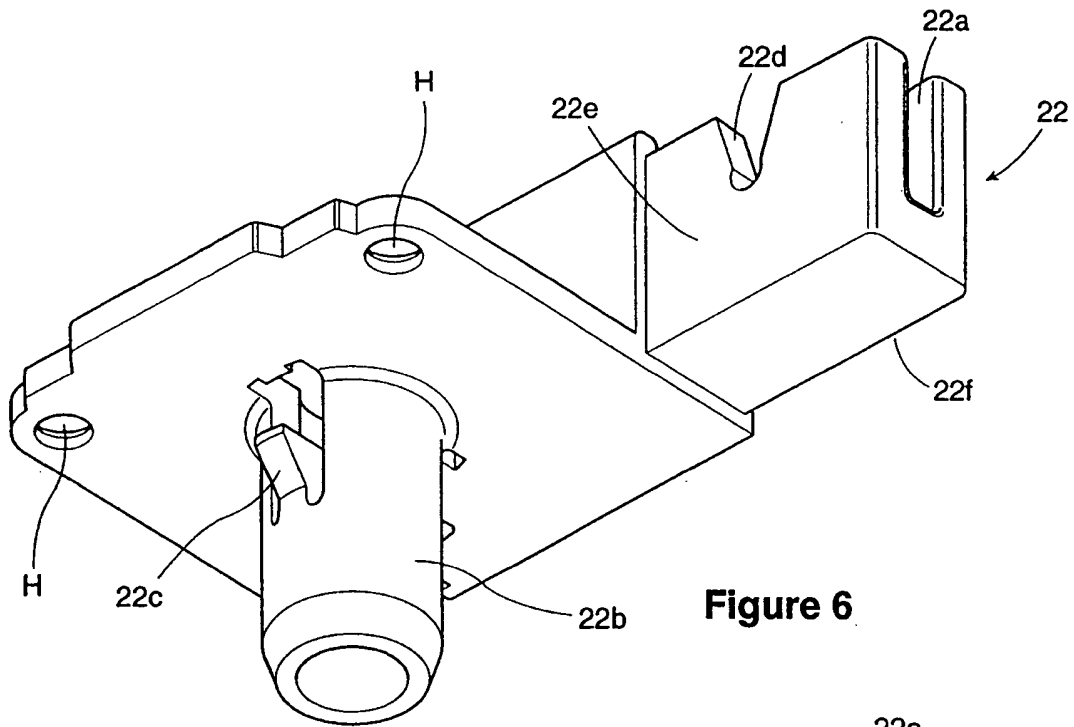


Figure 6

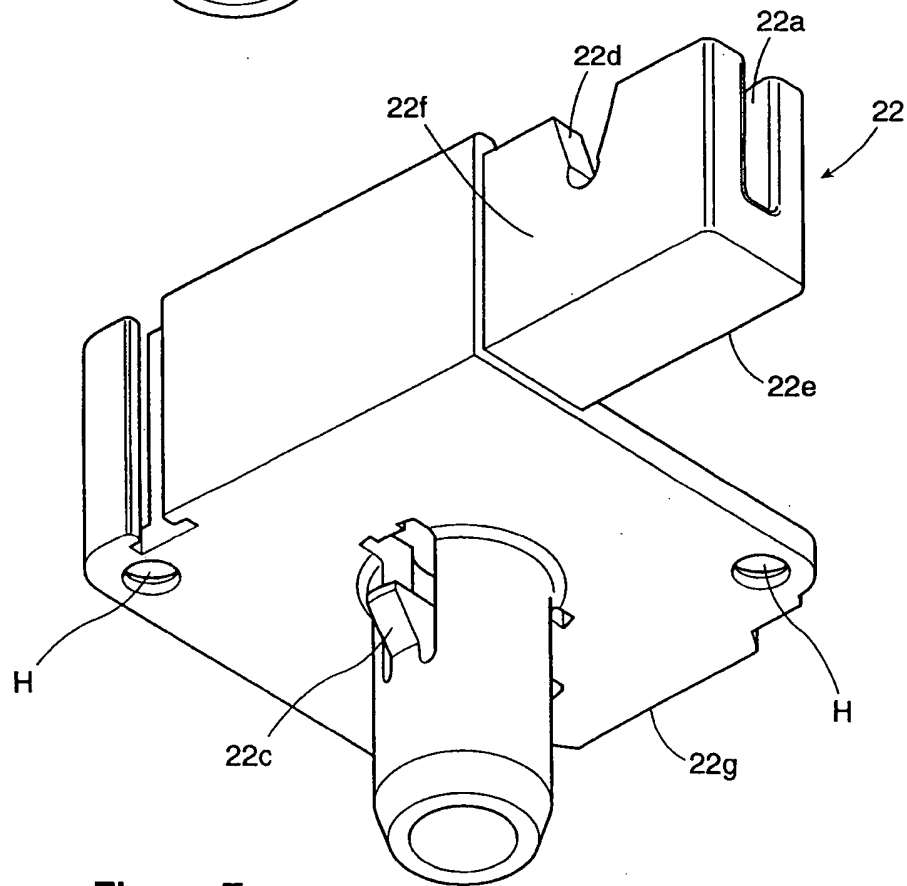


Figure 7

9/22

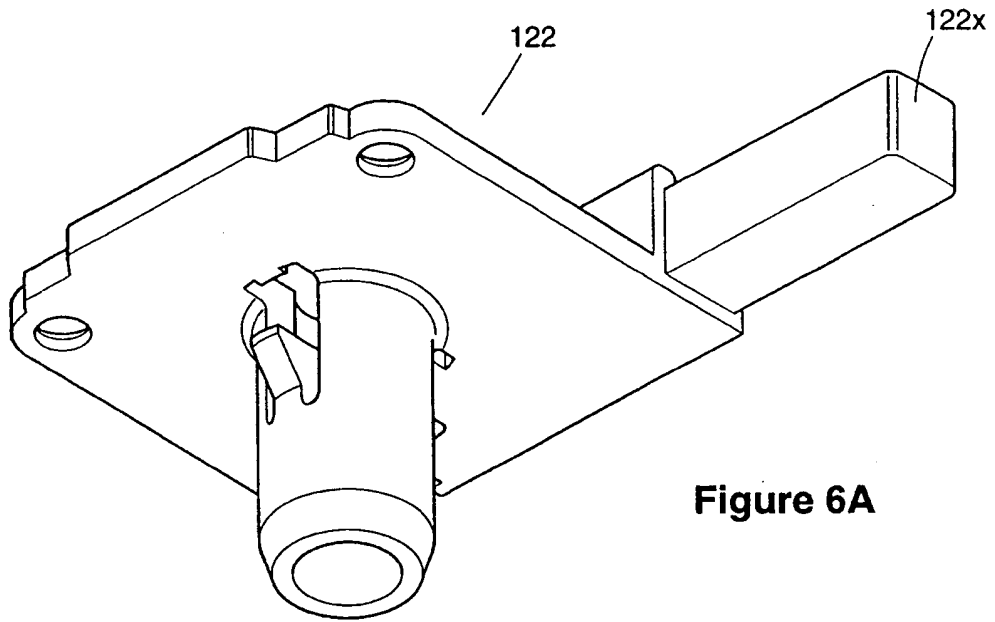


Figure 6A

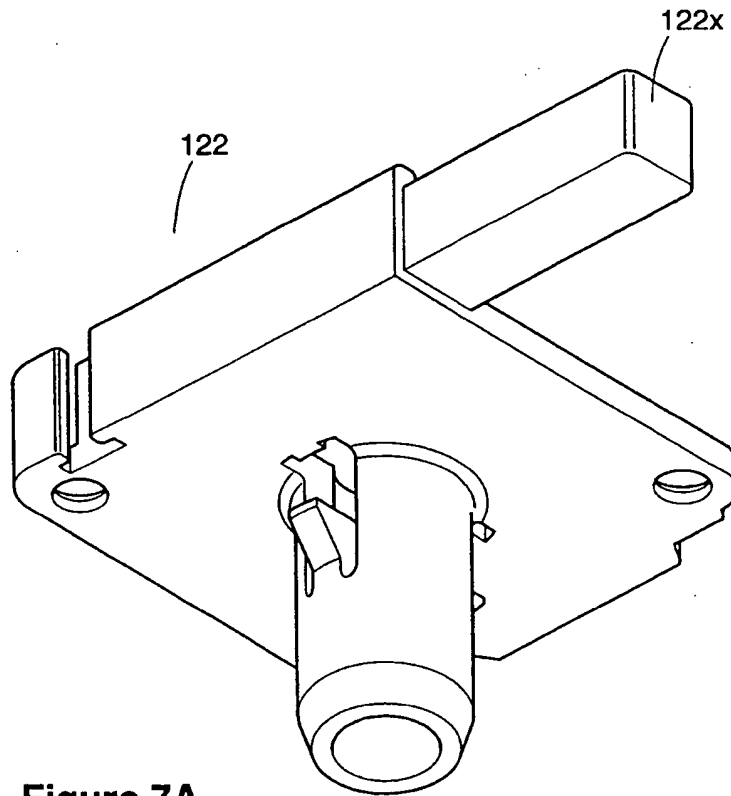


Figure 7A

10/22

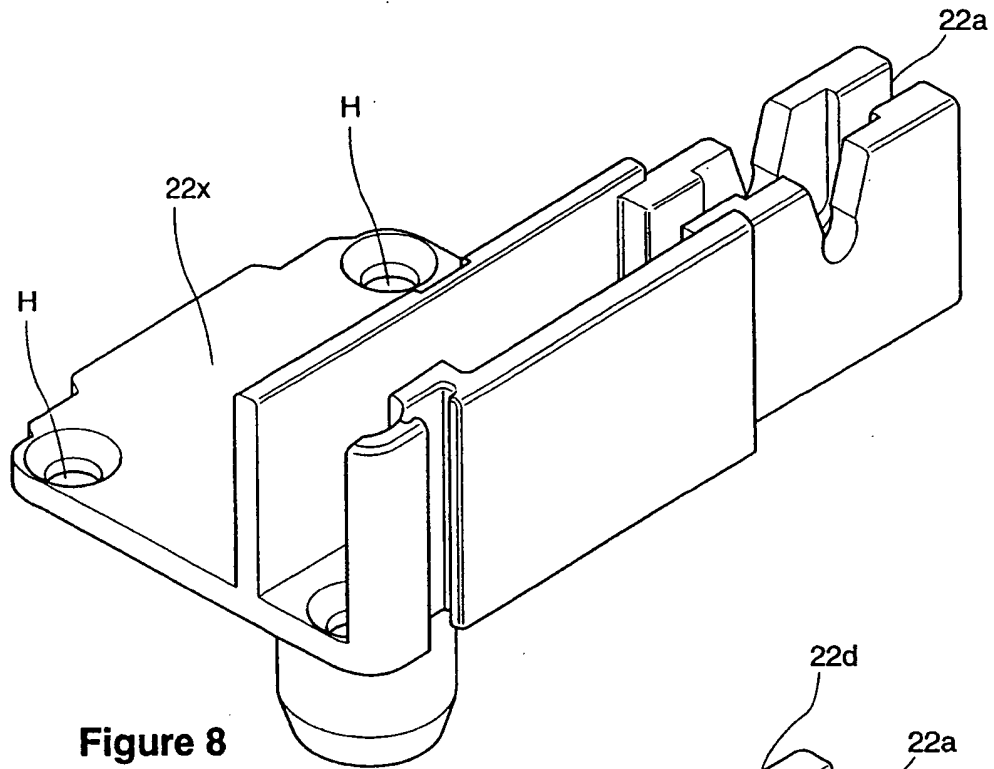


Figure 8

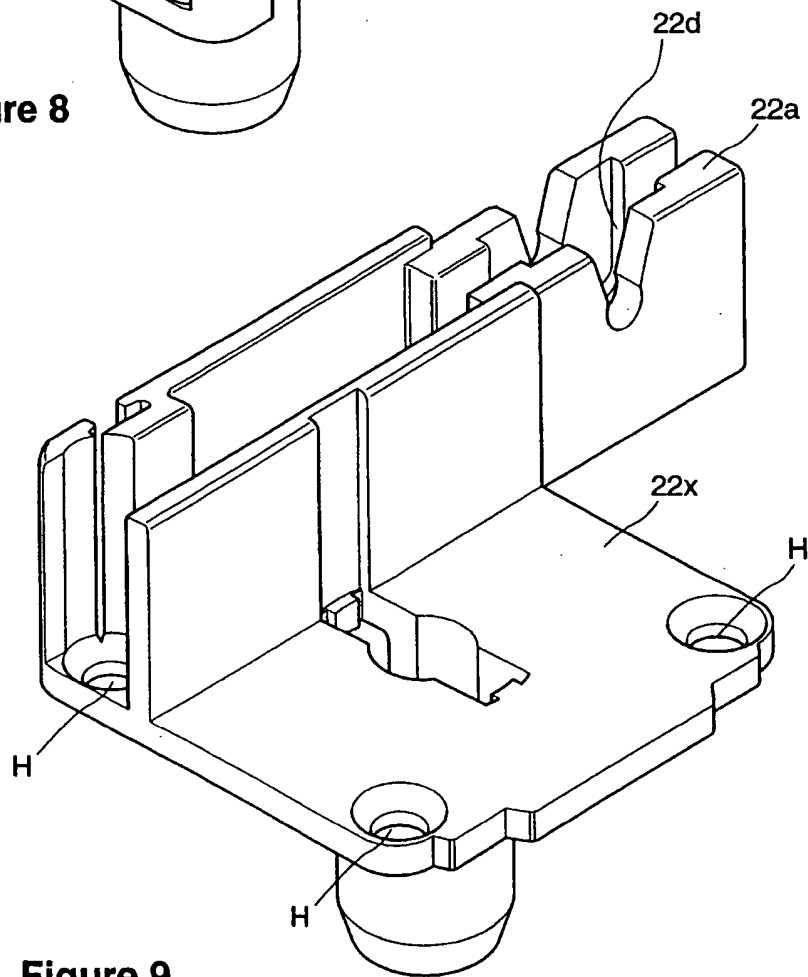
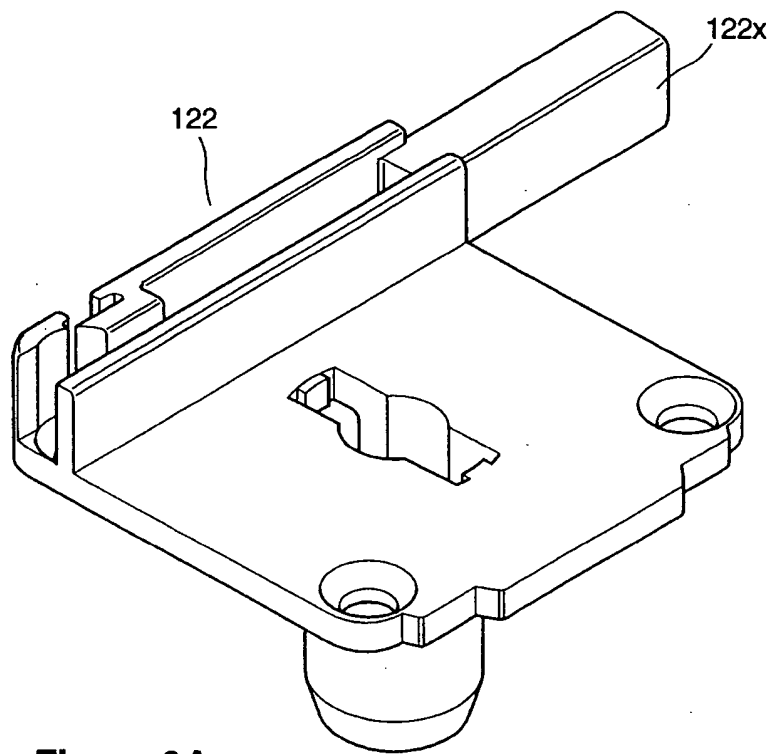
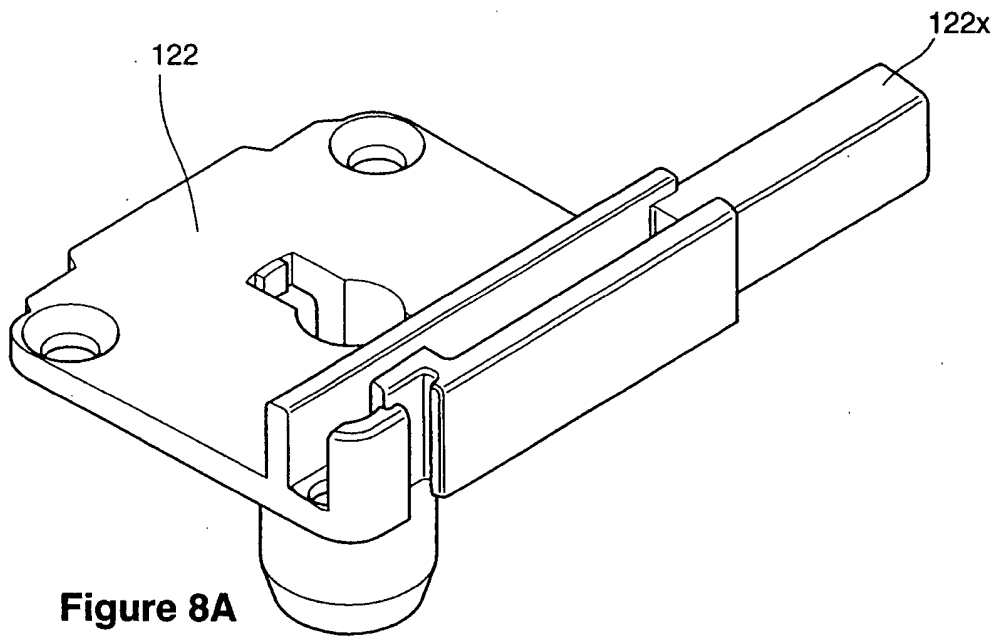


Figure 9

11/22



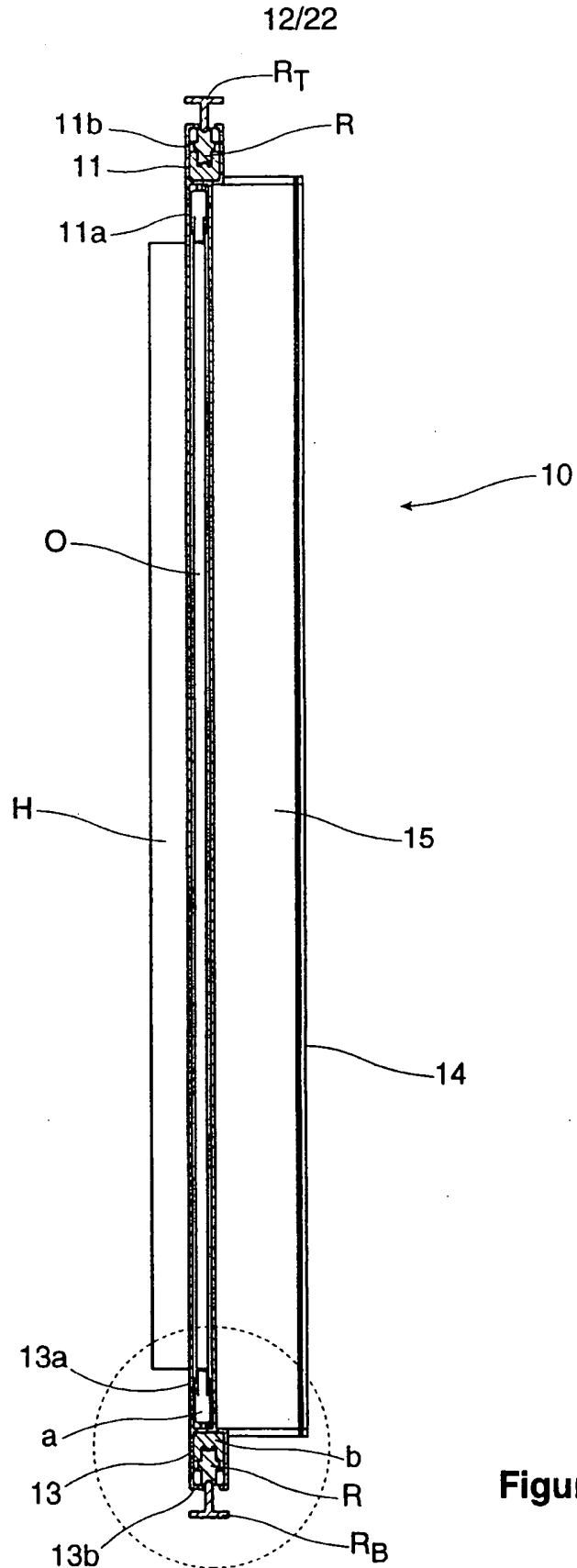


Figure 10

13/22

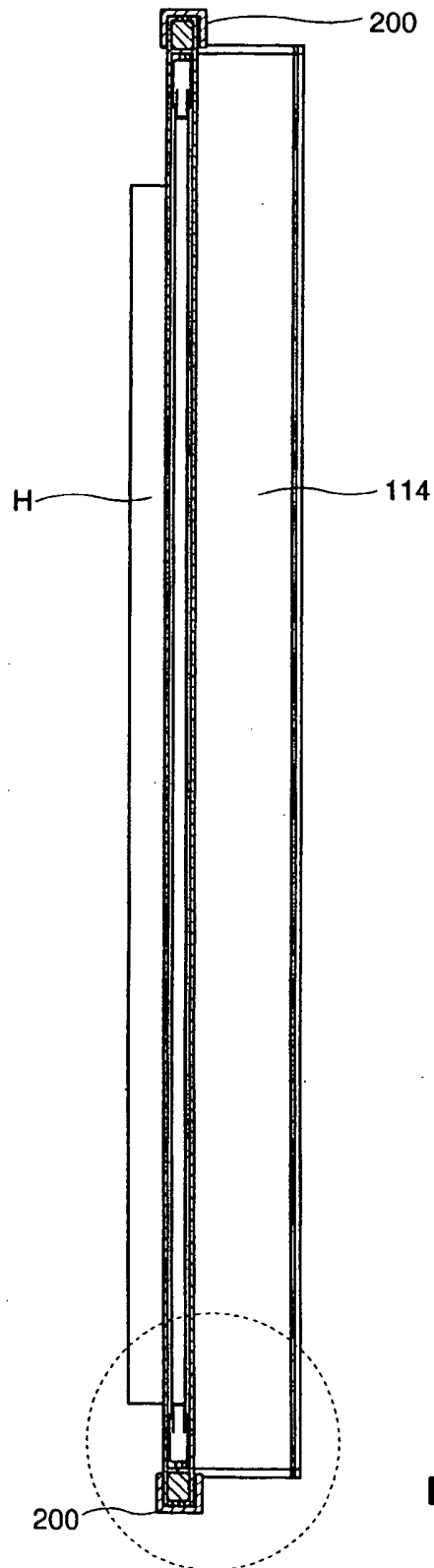


Figure 10B

14/22

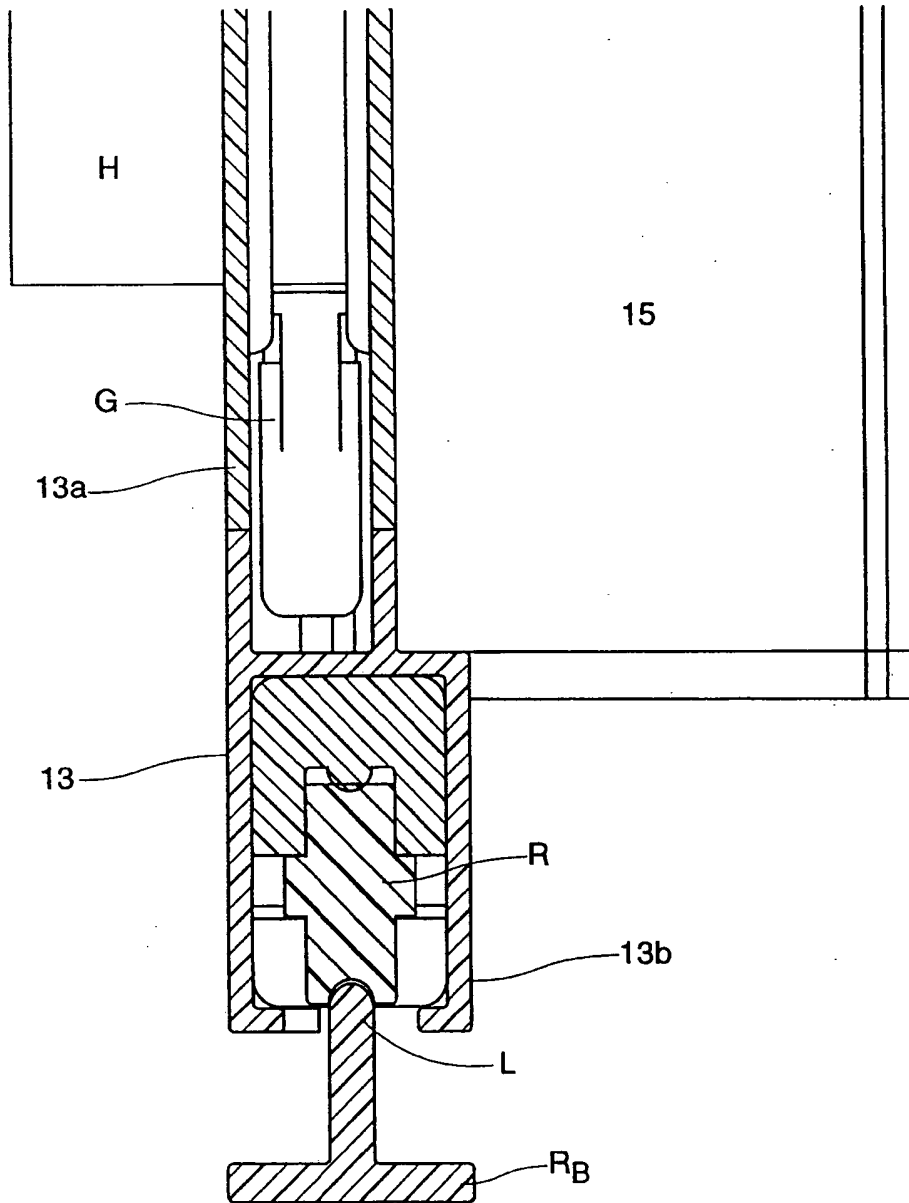


Figure 10A

15/22

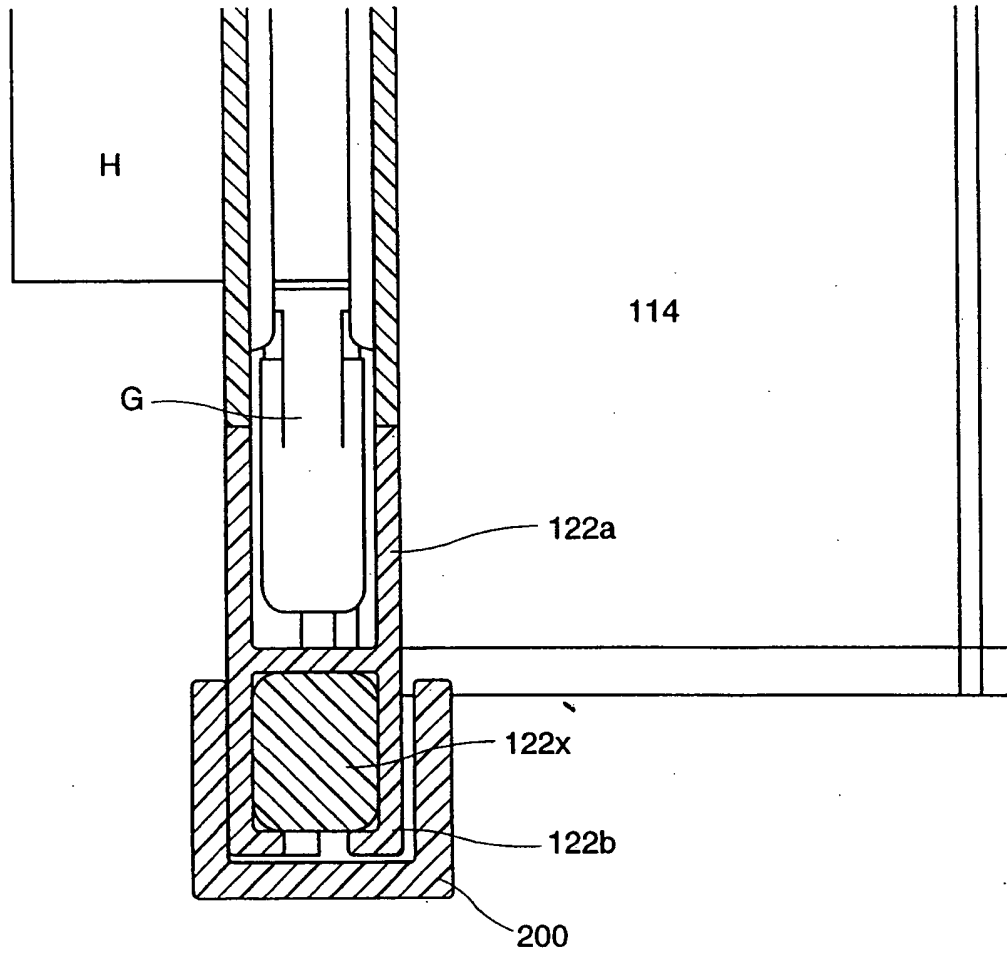


Figure 10C

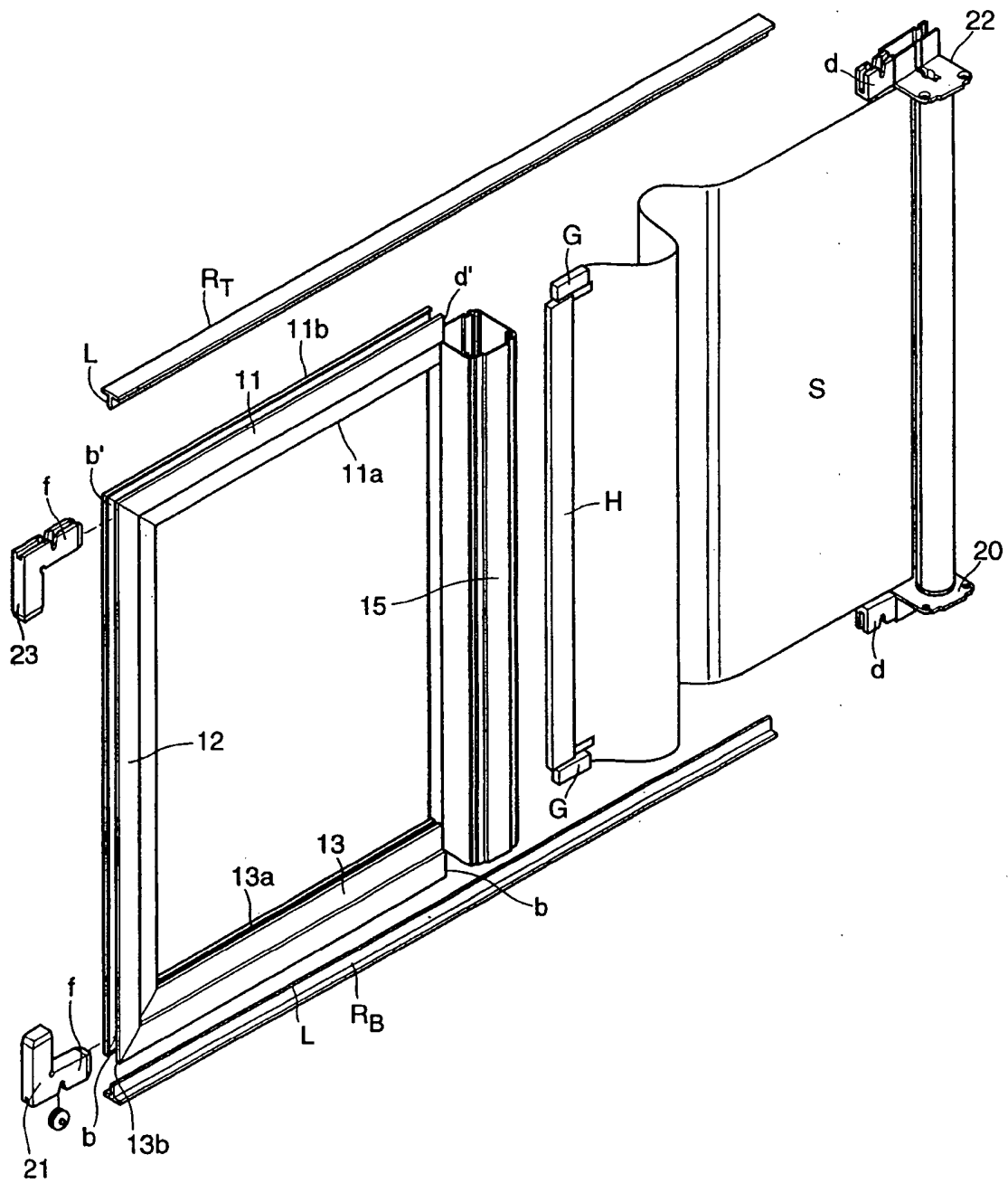
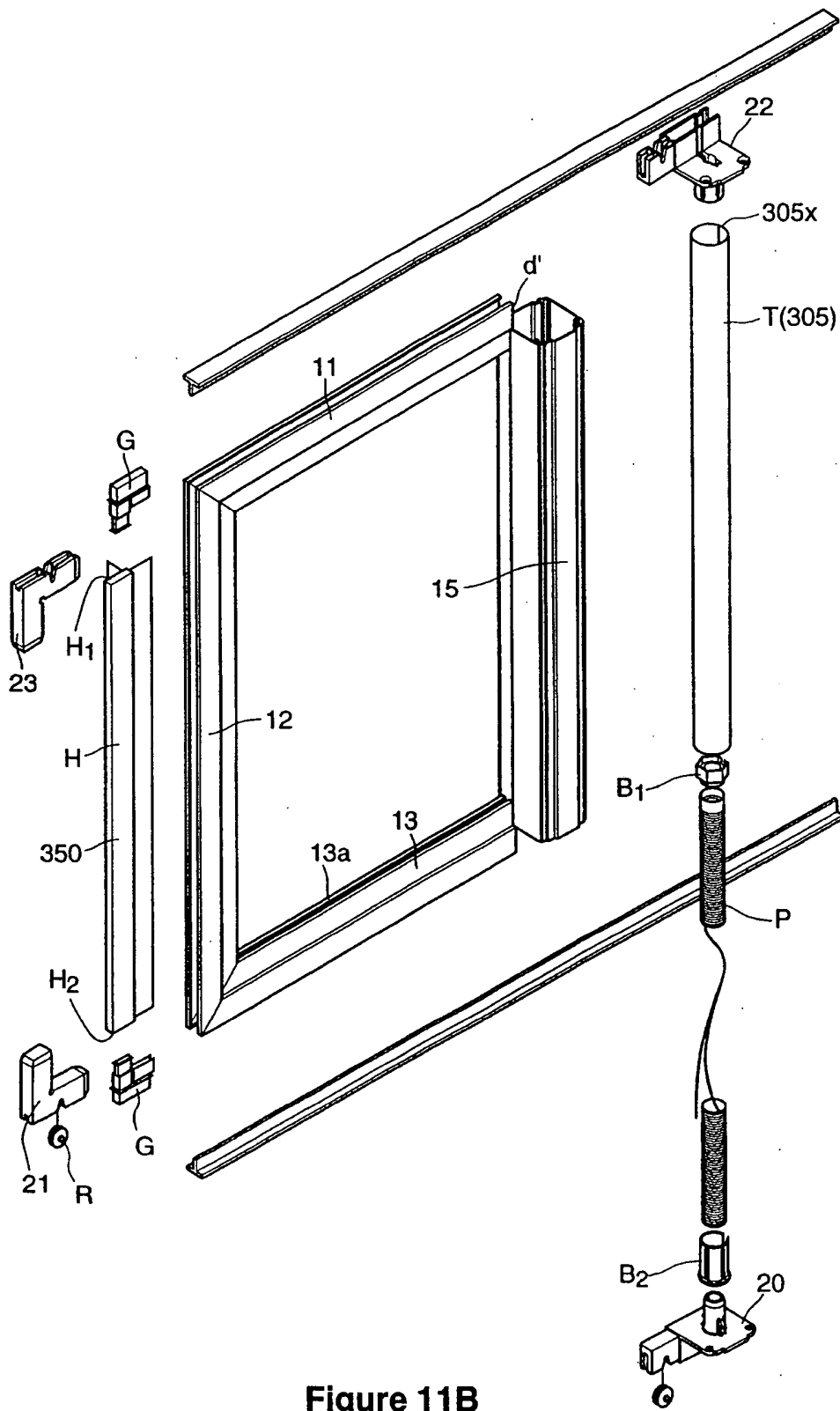


Figure 11A

18/22



19/22

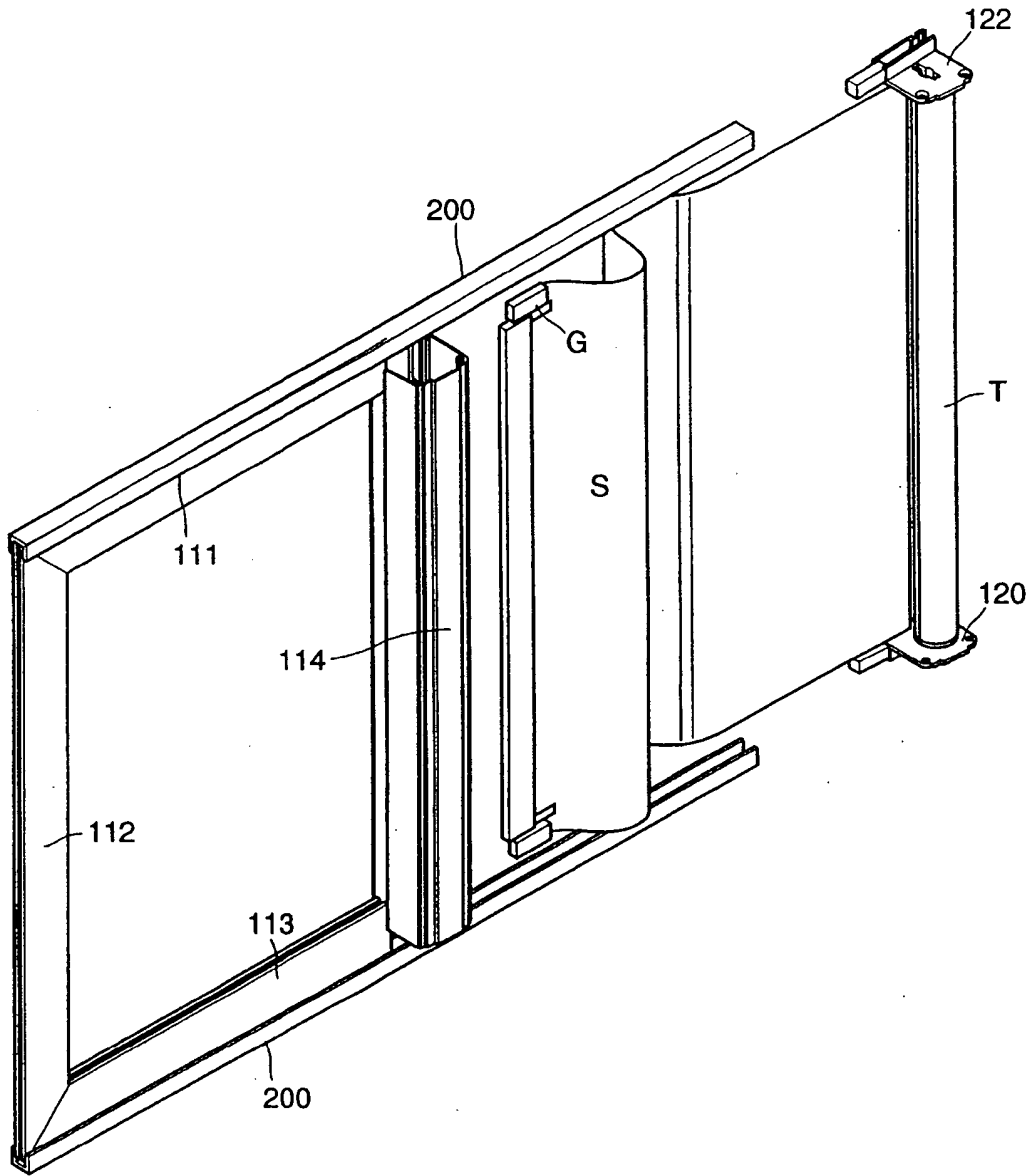


Figure 11D

20/22

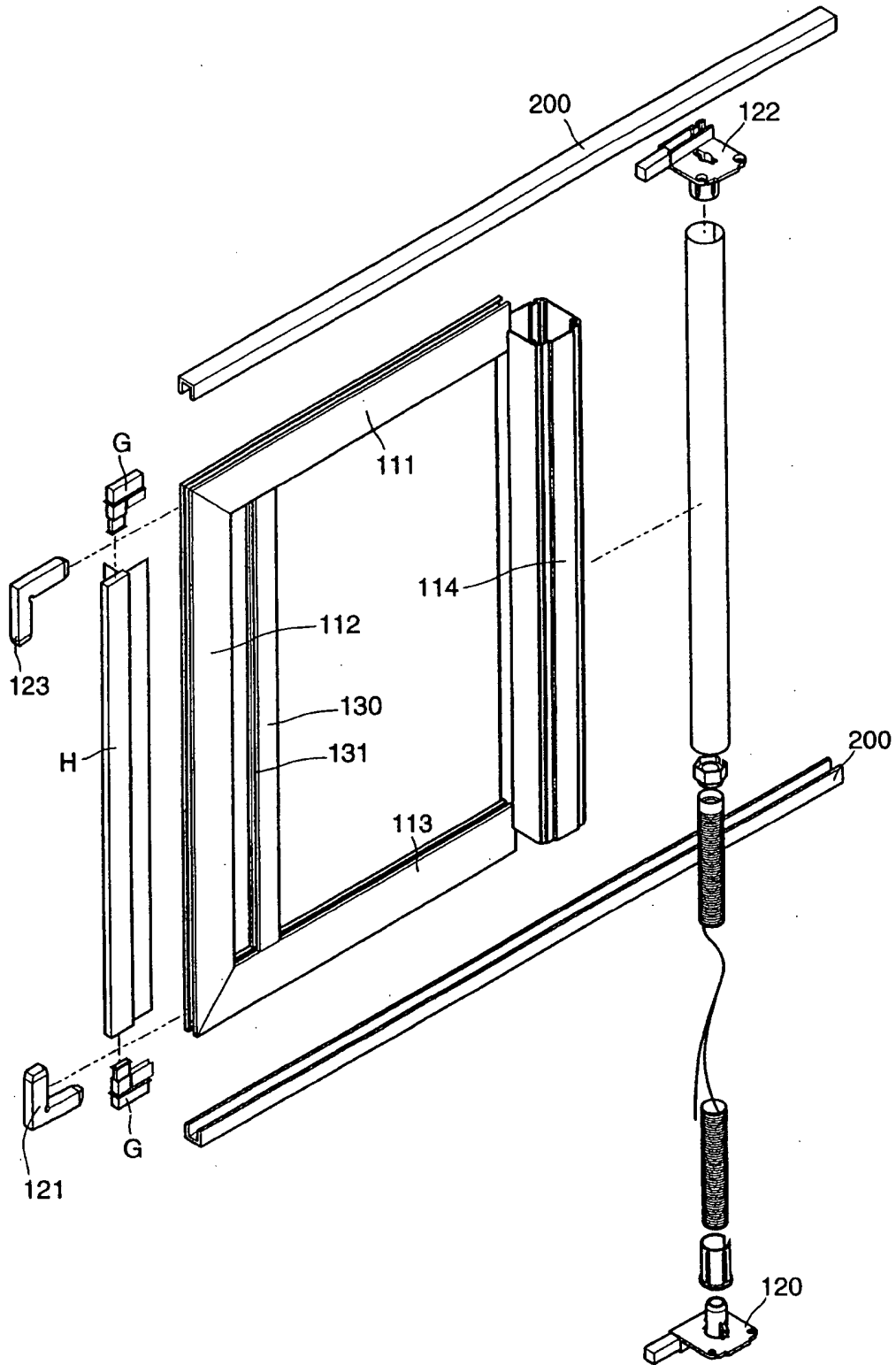


Figure 11E

21/22

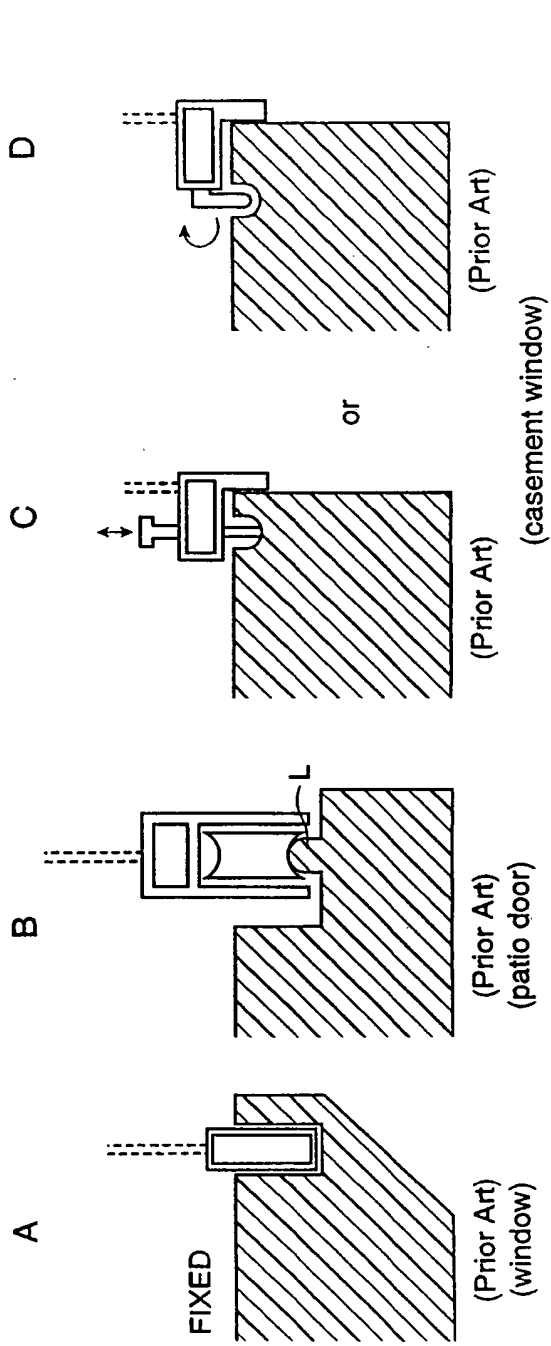


Figure 12

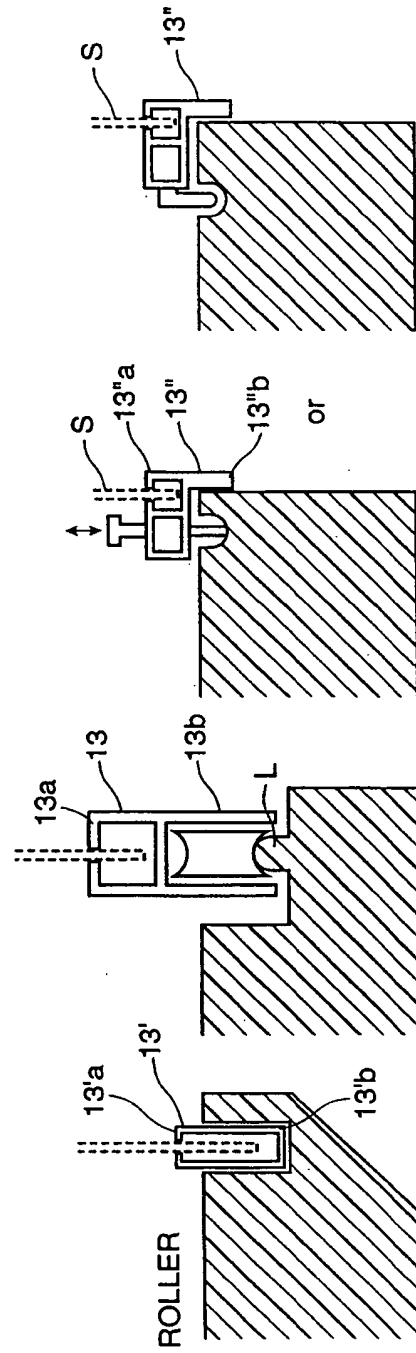


Figure 13

22/22

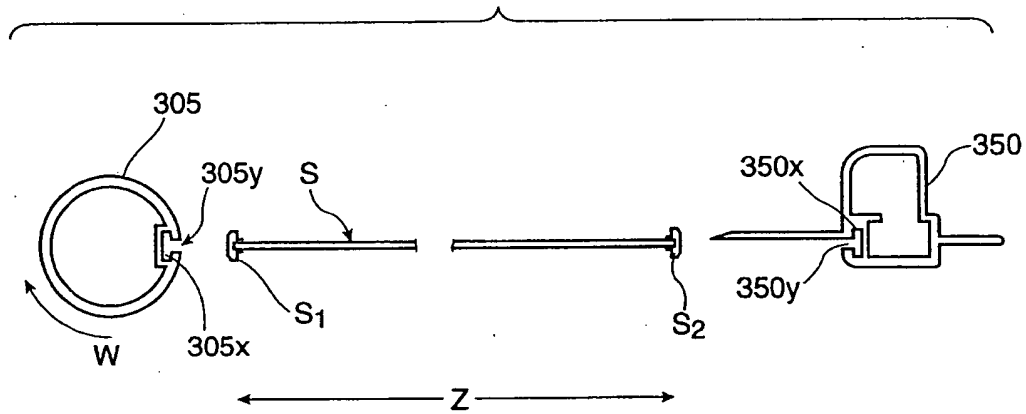


Figure 14



(12)

(21) 2 359 549

(51) Int. Cl.⁷: **E06B 9/54, A47G 5/02**

(22) 22.10.2001

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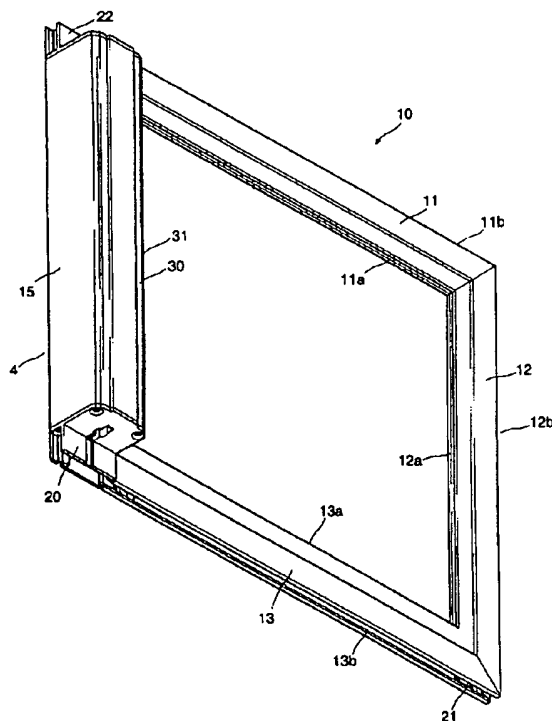
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(54) SCREEN FRAME WITH INTEGRAL ROLL SCREEN COMPARTMENT

(57)

A sliding screen frame for a closure assembly, said frame comprising framing sections assembled to form the screen frame, one of said frame sections being adapted to contain a roll out screen, said roll out screen being slideable between a fully extended position, whereat the screen is substantially payed out from said roll, and a fully retracted position; wherein the screen frame is free to slide in the closure assembly whether the roll screen is at the fully extended or the fully retracted position.





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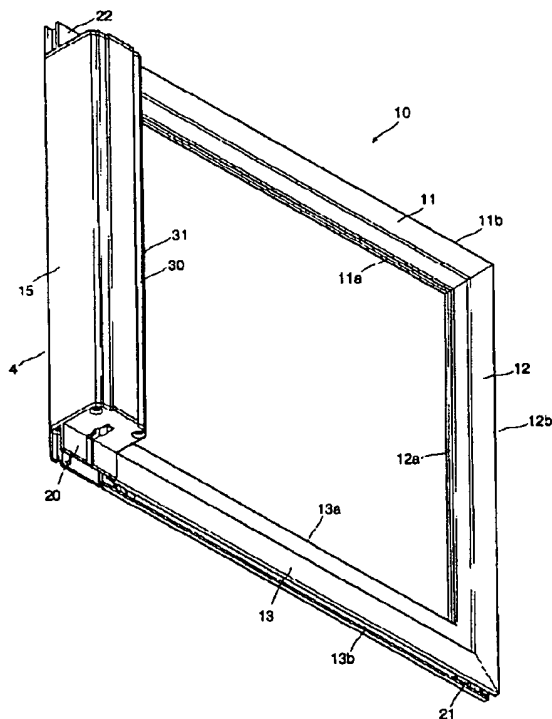
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(54) Title: SCREEN FRAME WITH INTEGRAL ROLL SCREEN COMPARTMENT



(57) Abrégé/Abstract:

A sliding screen frame for a closure assembly, said frame comprising framing sections assembled to form the screen frame, one of said frame sections being adapted to contain a roll out screen, said roll out screen being slideable between a fully extended position, whereat the screen is substantially payed out from said roll, and a fully retracted position; wherein the screen frame is free to slide in the closure assembly whether the roll screen is at the fully extended or the fully retracted position.

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ABSTRACT

A sliding screen frame for a closure assembly, said frame comprising framing sections assembled to form the screen frame, one of said frame sections being adapted to contain a roll out screen, said roll out screen being slideable between a fully extended position, whereat the screen is substantially payed out from said roll, and a fully retracted position; wherein the screen frame is free to slide in the closure assembly whether the roll screen is at the fully extended or the fully retracted position.

TITLE OF THE INVENTION

SCREEN FRAME WITH INTEGRAL ROLL SCREEN COMPARTMENT

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FIELD OF THE INVENTION

This invention relates to screens for closure assemblies and in particular for patio doors and windows.

10

BACKGROUND OF THE INVENTION

In the art there exists numerous devices which provide screening to prevent insects from entering open windows and patio doors. These screening devices may be placed in position within a channel provided with the frame sections of typical window or door assemblies with the screen of a predetermined thickness so as to easily fit within the channel. Patio door screens may be slideable in a channel on a track assisted by rollers and moveable to and from the position wherein the screen blocks the opening when the door is in the open position and prevents insects from entering the dwelling, to a position away from the opening wherein the screen does not block the opening

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More recently, roll out screen assemblies have been provided which include after-market products which are permanently fixed in position on or near an exterior

frame section adjacent to the door opening. At this position when desired the screen may be rolled out from its housing at fixed position and extend across the door opening when the door is in an open position. The screen of course may be accumulated on a roller in the housing and thereby provide the occupant with a clear view of their yard. But such a construction has difficulty in providing an adequate barrier to insects. They are unsightly and are also costly and may be beyond the level of skill for a homeowner installation.

Other efforts therefore have been made to make roll screen constructions more invisible and yet functional. Such constructions may be found in Applicant's prior granted patent, United States Patent No. 6,267,168 which teaches the use of a roll screen cassette contained within a framing section of a closure assembly which provides guides in the header and sill frames for the leading edge of the roll screen. This construction improves the barrier against insects but raises other issues. Applicant is also aware of United States Patent No. 6,167,936 that addresses a similar concept. However, such hidden constructions do require that the window frames be manufactured to required specifications to include a void wherein the roll screen may be inserted. Conceptually these patents provide a valuable approach but in one respect from an economic standpoint they require that existing window constructions be re-tooled for the required framing sections with the void for the hidden screen. Most manufacturers do not want to do this because of the cost of moulds and dies. There is therefore, still an unmet need yet unsatisfied which

provides a screen construction which does not require an extensive amount of re-tooling.

Attempts have been made to provide roll screen constructions within its own frame
5 for fastening to an existing window or door frame; for example, United States Patent
No. 5,479,979; United States Patent No. 6,082,432; and finally United States Patent
No. 6,070,642. Particularly referring to United States Patent No. 6,070,642 as by way
of example, there is taught a roll screen assembly which has a support frame which
is fixed into position with the upper member (30), as best seen in Figures 1 and 2,
10 including a compartment wherein the roll screen accumulates and pays out. The
entire frame section therefore is fixed into position upon a typical frame for a door
or a window which is adapted to the existing framing structure proximate the inner
peripheral of the window or door frame. The roll screen frame is permanently fixed
in position therefore and does not utilize any existing mounting portions available
15 with the homeowners windows or doors. Further in the case of a patio door the roll
screen frame does provide an obstacle at the threshold which will be discussed
hereinafter.

Another example is found in such a fixed structure in relation to United States Patent
20 No. 6,082,432 wherein the roll screen frame, as best seen in Figures 1 and 2, is fixed
in position and the roll screen is also fixed in position within the chamber
compartment (40) on the brackets (41 and 46) wherein the screen pays out and
accumulates. The handle portion or as it is referred to in the patent, the pulling

posts (25) extends across the frame portions (28 and 28b) which are positioned in fixed relationship to span the door. Nothing within the reference teaches that the frame section supporting the roll screen may also move in relation to the door in a sliding motion as is with a typical planar screen door for a patio door (which typical
5 screen does not include a roll screen component).

Some of the problems experienced with these prior art constructions include, with respect to the roll out doors, that a framing section is provided at the threshold of the assembly. This is true, for example, for screen doors manufactured by the Phantom
10 Manufacturing Limited under the trademark "PHANTOM"™ and by Monroe Tool and Die, and/or KSG Products for "MIRAGE"™ door screens. Typically, these products resemble United States Patent No. 6,082,432 and require supplementary frame sections that extend around the door assembly which provide the obstacle adjacent to the threshold of the assembly. When the roll out screen is accumulated
15 into the roll tube housing, the threshold remains as an obstacle to block the egress of an individual and particularly for those using wheel chairs, walkers and the like. People without particular challenges may simply step on the threshold obstacle and disform it to prevent the screen from rolling out and requiring an expensive repair. Further, such installations require expensive labour for installation and may be quite
20 expensive in comparison to a typical sliding screen door which is not fixed in position.

Applicant is also aware of a product SCREEN AWAY™ for retractable roll screen assemblies manufactured by Superior Building Products which provides such a device which includes approximately 18 to 24 parts and 22 steps involved in assembling the kit of components provided. Although the product may be
5 esthetically pleasing once assembled the threshold obstacle is evident which must be present to provide support for the leading edge of the roll screen as it moves across the opening.

However, a typical known sliding screen frame, for installation adjacent a patio
10 door, when positioned across the patio door opening blocks the occupants view of the yard and may be esthetically displeasing. If the screen door is slid to the opposite position away from the opening then the opposite glass pane is obstructed as well.

15 None of the prior art constructions identified above known to Applicants addresses the issue which Applicants' current invention focuses in upon. That is with all of the knowledge of those designing roll out screen assemblies which are bolted in place whether or not in a frame, none of the inventors including Applicant's prior construction take advantage of the existing channels and tracks within windows and
20 patio doors to allow for simplicity of installation to easily fit known constructions for windows and patio doors.

Applicant therefore is providing a roll screen frame construction, which is standardized at its perimeter to mate and interfit with well known channels, tracks and hardware. In doing so the present roll screen design makes replacement and installation much simpler. In spite of the numerous efforts made to provide an acceptable roll screen for windows and doors there still remains a long felt need left unaddressed in the art for a roll screen assembly which may be simply and easily installed by the homeowner. Nowhere within the prior art is such a roll screen frame provided which may be merchandized as an OEM as well as an after-market product and which will fit the same constraints provided with windows and doors such as for example the well known planar screen frame which slides in a track in a frame adjacent to a patio door. These particular known frames are inexpensive.

It is therefore a primary object of the invention to provide a roll screen frame construction, which is standardized at its perimeter to mate and interfit with existing well known channels, tracks and hardware for windows and doors.

It is yet another object of this invention to provide a sliding screen frame with integral roll screen housing which frame may be slid across the opening of a closure frame and which frame is also used to support the free end of the roll out screen as well.

It is another object of the invention to make such a roll out screen assembly affordable.

It is yet a further object of the invention to provide a screen assembly in a fully assembled or alternative knock down kit form which is easy to assemble and/or install.

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It is yet a further object of the invention to provide a screen assembly which may be provided as a kit of components.

It is yet a further object of the invention to provide a screen assembly which is cost
10 effective.

Further and other objects of the invention will become apparent to those skilled in the art when considering the following summary of the invention and the more detailed description of the preferred embodiments illustrated herein.

15

SUMMARY OF THE INVENTION

Reference to a roll screen assembly within this specification is to be defined as also including any screen construction which pays out from and returns to a housing
20 whether a roll screen installed with or without a roll tube, or whether the screen is pleated in an accordion like fashion or the like or any other similar screen construction without limitation. When the term screen is utilized its is intended that

other matrices such as shades, blinds, and screens whether transparent , opaque, mesh or the like is implied without limitation.

According to a primary aspect of the invention there is provided a screen frame
5 construction, preferably a roll screen, comprising framing sections and a screen
housing from which a screen is payed out and accumulated, said frame sections
being adapted proximate the outer perimeter side to interfit with, preferably existing
well known, channels, tracks and hardware for windows and doors, and said frame
sections being adapted proximate the inner side to provide a guide for the screen as
10 it is payed out from the housing .

According to yet another aspect of the invention there is provided a sliding screen
frame comprising framing sections and a screen housing from which a screen is
payed out and accumulated, wherein said frame sections are adapted proximate the
15 outer perimeter side to interfit with the track of the closure assembly to enable the
screen frame to be slid across the opening of the closure assembly and the frame
sections also being adapted to support the free end of the screen.

According to yet another aspect of the invention there is provided a sliding screen
20 frame for a closure assembly, said screen frame being moveable between a position
wherein the screen frame is in an opening blocking position to second position
wherein one is free to pass through the door opening, said screen frame comprising
framing sections having two sides, and a housing wherein a screen is contained and

payed out , preferably a roll out screen, said framing sections having two sides, a first side adapted to receive the free end of the screen, and the other side adapted to engage with channels, tracks, hardware or the like of the closure assembly, wherein said screen has a free end being moveable across the screen frame from an accumulated position within the housing, and preferably disposed on a roll, to a fully payed out extended position, the free end of the screen riding within the first side of the framing section.

According to yet another aspect of the invention there is provided a preferably slideable screen frame for a closure assembly, said frame comprising framing sections and a housing for paying out and accumulating a screen, and preferably a roll screen, said framing sections have a first and second side, the screen being moveable and guided by the first side of the framing sections between a fully extended position, whereat the screen is substantially payed out from said housing, and a fully retracted position within the housing; wherein the screen frame is adapted, proximate the second side of the framing section, to engage with and preferably slide in the, preferably existing channel, track or hardware disposed with closure assembly whether the screen is at the fully extended or the fully retracted position.

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According to yet another aspect of the invention there is provided a sliding screen frame comprising frame members including an integral roll out screen housing, said frame members being adapted to allow said frame to slide across a closure

frame as well as providing a support for the free end of the roll out screen. In one embodiment said frame includes rollers or wheels preferably located proximate the top and/or bottom of the frame to assist with the sliding motion of the screen frame across the closure frame opening. Preferably the rollers or wheels are included with a support bracket for supporting the roll screen in said housing. In one embodiment the preferred bracket may also include a section to engage the frame member proximate the corners to assemble the members into the screen frame and to house the roller for movement on the track of header and sill of the closure assembly. Preferably the bracket also includes supports within the brackets opposite the rollers or wheels to engage the roll tube of the roll screen.

It is not necessary in all embodiments that the screen frame be slideable within conventional constructions such as channels, tracks, and the like. The essence of the invention is therefore that the screen frame includes framing sections and a screen housing, and that each section includes an inner portion adapted to be used as a guide for the free end of the screen and an outer portion adapted to engage with and in one embodiment slide in the preferred existing channel, track or hardware disposed with closure assembly whether the screen is at the fully extended or the fully retracted position.

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The invention therefore also includes a frame member for a screen frame including a housing from which a screen is payed out and accumulated, said member comprising a first portion adapted for engagement with, preferably conventional

existing, window and door frame hardware, channels, tracks and the like; and a second portion adapted to guide the free end of the screen.

Therefore, to these ends according to another aspect of the invention, there is
5 provided a kit of components for a screen frame comprising framing members, a screen housing, and a screen contained in and payed out from said housing, said framing members being firstly adapted engage with, preferably conventional existing, window and door frame hardware, channels, tracks and the like; and also being adapted to guide the free end of the screen. The first adaptation of the frame
10 members is to provide engagement of the screen frame of the present invention with known constructions which presently engage known screens for doors, windows and patio doors, 1) such as a typical rail used with patio doors which includes a rail or the like which engages a sliding mechanism, usually a roller; or 2) such as a typical lift out screen arrangement for windows including a generally u-shaped
15 flange for acceptance of a screen frame; or 3) such as a typical casement screen channel with engagement pins which are rotated out of position to allow screen removal; wherein the present invention is like the prior art constructions not permanently attached which can be readily replaced and attached by a home owner. Therefore a kit of components may be provided which includes the framing sections
20 and the housing and roll screen which may be assembled to provide the above-mentioned screen frame. Of course the screen frame may also slide which has been described above. This however, is not absolutely necessary. The need that is being satisfied is that the present invention allows for replacement of existing screens

using the same channels, rails and/or hardware provided for existing assemblies wherein the present invention is adapted to fit those channels, rails and/or hardware allowing the home owner the ease of installation without providing the requirement of an expensive installer and retro fitted parts.

5

According to yet another aspect of the invention there is provided a support bracket for a roll screen which comprises a support for said roll screen proximate one end of the bracket and an integral mounting part for a roller or wheel proximate the other end of the bracket. Preferably the bracket may be made from nylon, plastic, Delrin®

10 or the like.

The framing members may be formed from nylon, plastic, steel, aluminum, fiberglass, PVC or the like by any conventional method including roll forming, pultrusion, extrusion, CNC fabrication, with no limitation being implied whatsoever.

15

When the term conventional and or existing hardware , channels, tracks or the like is used in this specification with reference to the various aspects of the invention described above it is implied that such hardware , channels, and tracks are utilized to secure existing planar screens found in windows, doors, patio doors and other
20 closure assemblies whether existing, replacement or original assemblies such as but not limited to tilt and slide windows, casement windows, double hung windows, awning windows, pivoting doors, and patio doors. Further it is intended that the screen assembly of the various embodiments of the invention may be easily and

simply placed or dropped into position with a minimum of effort without requiring fastening in position with the exception of rotating or retracting a holding pin or the like or making a tension adjustment to the roller. Conventionally hardware channels and/or tracks or the like are located with the various assemblies discussed above to
5 allow this simple installation. The homeowner can therefore use conventional existing hardware for installation of the various embodiments of the present invention or alternatively if desired can provide replacement hardware which may be of any compatible shape or configuration or which may engage the conventional hardware or alternatively may replace it. Simplicity of replacement or installation is
10 the key for our screen assembly.

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a perspective view of the frame section in a patio door illustrated in a
15 preferred embodiment of the invention.

Figure 1A is a similar view to that of Figure 1 for a window assembly.

Figures 2 and 2A are exploded perspective views of the frame section of Figure 1 and
20 1A.

Figures 3 and 3A are cross sectional views of the frame section 13 and 113 of Figures 1 and 1A illustrated in preferred embodiments of the invention.

Figures 4 and 4A are perspective views of the sections of Figures 3 and 3A.

Figure 5 is a cross sectional view of the cover portion (14) illustrated in Figures 1 and
5 1A.

Figures 6, 7, 8 and 9 and 6A, 7A, 8A, and 9A are top and bottom front and rear
perspective views of the bracket portions (22) and (122) as seen in Figures 2 and 2A
and illustrated in preferred embodiments of the invention.

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Figures 10 and 10B are cross sectional views of the screen assembly of Figures 1 and
1A providing details with respect to the operation thereof and illustrated in preferred
embodiments of the invention.

15 Figures 10A and 10C are close up cross sectional views of the bottom end of Figures
10 and 10B indicating the details thereof.

Figures 11 and 11D are partially exploded schematic views of the assembly of
Figures 1 and 1A illustrated in preferred embodiment of the invention.

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Figure 11A is a further exploded schematic view of Figure 1.

Figures 11B and 11E are substantially totally exploded schematic views of the assembly of Figures 1 and 1A.

Figure 12 A, B, C, are a series of prior art hardware and planer screen schematic
5 views for various closure assemblies.

Figure 13 A, B, C, are a series of schematic views of various embodiments of the invention in engagement with similar hardware to that of Figure 12 but incorporating Applicants' invention.
10

Figure 14 is a schematic view indicating the manner in which the screen is attached to the handle and the tube illustrated in one embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

15

Although the following description focuses on a patio door screen, it is not intended that the invention be limited in this aspect. The invention also may be embodied with other doors, windows, or the like. Those skilled in the art will recognize these other uses without limitation.

20

Referring generally to the figures, there is illustrated a screen frame assembly (10) which includes a screen housing (14) and frame sections (11, 12, and 13) making up the frame (10). The assembly (10) slides within an opening of a closure assembly

such as a patio door. The sliding action of the screen frame (10) is accomplished by sliding the screen frame along the edges (11b and 13b) within tracks or channels normally found within a patio door assembly. These channels are found in the sill and the header of the door assembly. The screen frame (10) therefore moves as is known in prior art sliding constructions. However, integral with the framing section (10) is a compartment (15) within which is found a spring biased roll screen assembly. As best seen in Figure 2, the leading edge (31) of the screen (30) travels within the inside edges (13a and 11a) of the frame portions (11 and 13) to and from a fully accumulated position wherein the screen is accumulated on the roll tube which will be described hereinafter, to a fully extended position wherein the leading edge (31) is located proximate the channel portion (12a) adjacent the interior of section (12) which screen edge (31) may be latched and/or locked in position. Whether the screen (30) is at the fully accumulated or the fully extended position, the entire screen assembly (10) may be slid across the patio door opening. In this manner, the screen is slid out of a position where it might block the threshold to an occupant. This allows passage of wheel chairs, walkers and the like in a simple manner and overcomes one of the problems in the art.

As best seen in Figure 3 and 4 the portion (13b) of section (13) has opening (b) therein to be received in standard sized channels or rails provided in the sill and header frames of the track assembly. The leading edge of the screen (31) will slide or be guided via guide (G) within the section (13a) within channel (a) thereof as

described above and hereinafter to assist motion of the leading edge (31) of the screen (30).

Rollers (R) may be provided with the brackets (21 and 20) at mounting slots (20d) and (21d) which rollers travel within the sill track. They also may be provided for brackets (22) and (23) for the header. The bracket portions (20, 21, 22 and 23) also provide channel portions (20a, 21a, 22a and 23a) which marry within the track portions of the closure assembly and which assist with the assembly of the screen frame 10. As seen in Figure 11a leg portions (d) and (f) for brackets (20 and 22) and (21 and 23) respectively interfit in channels (b), (d') and (b') respectively to assemble the frame sections (11, 12 and 13) with the housing (14). The brackets also provide extensions for example, track portion (13b) and providing a channel (b) to receive the track disposed within the sill and header of the rails normally provided. The roller (R) therefore is spring biased as is known to accommodate various tensions. Release pins may be provided, as is known, within the legs of brackets (21 and 23) to allow installation and replacement of the screen frame in a similar manner as conventional planer screen frames, which are known in the art. The brackets (22 and 20) support the roll screen assembly (S) therebetween mounted on a tube. The tube has a slot in it to receive one end of the screen with the other end of the screen being proximate the exit from the tube housing (15) as best seen in Figure 14 at (15c). The brackets (20 and 22) as best seen in Figures 6, 7, 8 and 9 have holes therein for aligning with holes (y) within the housing (14) to align the portion (22z) with portion (15b) and receipt of threaded screws. The mouth (15c) therefore of the cover (15) allows for the free end

(31) of the screen assembly (30) to extend therefrom. Locking portions (22c) provide locking of the roller tube in position.

When fully assembled the screen assembly (10) therefore can replace an existing
5 sliding screen utilizing the same channels of the existing patio door. This enables the homeowner to effect the replacement without the need for an experienced installer or add on supplementary components. No assembling is required. The screen assembly 10 merely drops into the existing channels.

10 As can be seen from the Figures, the present invention resembles the well-known prior art sliding patio door screen in that it may be slid from a position where it fully covers the door opening to a position where it does not. However, it clearly has the added advantage in that the screen may be accumulated on the roller when the entire frame is at the first position so that it does not block the view of the occupants
15 when the patio door is in fact closed. However, when the patio door is open, the roll screen may be extended to the fully extended position and latched thereat so as to prevent insects from entering the dwelling. However, when an occupant wishes to exit the dwelling, the patio screen assembly (10) may be slid in a conventional manner so as to not obstruct the threshold as is the case with prior art structures
20 discussed in the background of the invention. The framing sections (11, 12, 13 and 14) may be made from aluminum extrusions or the like, and the brackets (20, 21, 22 and 23) may be manufactured from nylon or other resins. Section 14 may be an aluminum extrusion as well.

The entire assembly may be provided in a kit of components wherein all of the framing sections (10, 11, 12, 13 and 14), brackets (20, 21, 22 and 23) housing (14) and the roller screen assembly may be provided in the kit which may be easily assembled. When compared to the prior art constructions of PHANTOM™ or MIRAGE™, instead of the typical 22 steps in order to provide such a prior art construction which typically is done by an expensive installer, the present roll out screen will be marketed for substantially the same price as the well-known standard sliding planer screens in various consumer outlets and may be used to replace standard screens when they are in need of repair.

Further Applicants may utilize the flexible screen connectors of Figure 14 in the screen assembly (10) as taught in its prior patent technology referenced above, using a roll tube having a compatible detent therein and handle portion having compatible detent therein for receiving the flexible T-shaped connector at each end of a screen cloth which may therefore may accommodate easy screen replacement. It is required that the same dimensions (length, width and thickness) be utilized for the threshold and header track engaging framing portions (11 and 13) as those which are standard at the present date. This will allow for easy replacement of the conventional planer screen with the present invention. As is taught in Applicant's prior invention the tube may be tensioned by the means as disclosed therein.

Referring now to Figure 10, 10a, 11, 11a, 11b, and 14 there is illustrated the assembly (10) of Figure 1 engaging top rail (R_T) bottom rail (R_B) proximate the top thereof (L). Conveniently therefore the sections (11) and (13) are provided having openings or channel sections as best seen in Figures 3 and 4 at (11a) and (11b) and (13a) and (13b) which as best seen in Figure 11 defining the top and bottom sections of the screen assembly (10) which now includes the housing for the roll out screen (S) and the frame sections (11) and (13) which includes an upper and a lower section or profile (11a) and (11b), (13a) and (13b) respectively. The inside portions (11a) and (13a) are for the receipt of the legs (d) and (f) of the brackets (20, 21, 22 and 23) to close the frame sections and integrate the entire assembly by attaching the housing and roll screen thereto. Clearly, as can best be seen in Figure 10A the roller (R) engages the rail (R_B) proximate the top thereof (L) in a conventional manner, said roller being provided with the brackets (21 and 20) and preferably (23 and 22) as previously described in relation to Figure 2. The patio screen assembly (10) will therefore be free to roll upon the rails (T, R and B) in a conventional manner. However, the sections (11 and 13) also include sections (13a and 11a) for receipt of and the carriage of the guide (G) for the handle (H) of the screen assembly accumulated on the tube (T) advanced via handle (H) to the guides (11a and 13a) to proximate the section opening of (12a) where at the handle may be latched. The latch is not illustrated nor described and would be as is known. The brackets therefore in combination with the framing sections (11, 12, and 13) provide, along with housing (14), an integrated screen frame which will slide along the known rails in a patio door closure assembly with the guides (G) attached to handle (H) via the legs which extend upwardly and

downwardly into the opening provided in the handle with the handle being engaged with the T section shown in Figure 14 at (S2) attached to the screen and the handle at (305y) and to the tube at (305x) via T section (S1). As seen in Figure 11b the tube is attached to bushings (B1 and B2) which are subsequently attached to the pins provided with each bracket (20 and 22) to allow for the rotation of the tube. The bushings therefore provide for the pivoting of the tube while the spring is attached to the pivot (20b and 22b) and allows for pre-winding of the roller screen to a pre-determined tension to ensure that it will return to its fully accumulated position.

Referring now to Figures 12 and 13 there is illustrated examples of the various forms which the present invention may take without intending any limitation being derived by the reader in providing these examples. With regard to Figure 12 there is illustrated corresponding sections found in prior art installations typical for a slider window, for example A, wherein a channel is provided within which a typical screen frame fixed in position. However, the screen frame blocks the view of the individual as it is permanently placed in position until such time as it is removed. As seen in Figure 13A, the present invention provides for a combination of the screen including a frame which engages the same channel section in the prior art window of Figure 12A, and yet provides with the same frame section, the movement of the roll screen to and from the housing (14) to allow for the occupant to have the screen in place when the window is open and have the screen out of view when the window is closed. This may be accomplished utilizing the same window channel provided in known window and typically slider window constructions.

Referring now to Figure 12B, there is illustrated a typical rail of a patio door having a section (L) which engages a roller attached to a frame section which also has permanently installed therewith a screen. With regard to Figure 13B, the present invention includes and provides with the framing section and the assembly 10, as seen and described in relation to the prior figures, a roller within section (13b) which engages the known rail (L) within channel section (13b), and wherein in addition the free end (31) of the roll screen is movable within the channel (13a) of Section 13. The same advantages are described in relation to Figure 13A and are realized therefore as well with the patio door screen embodying the invention. The screen frame may roll on the rail (L) and the screen may be guided to and from an accessible position to a position wherein the screen is out of view.

Referring now to Figure 12C or 12D there is illustrated a typical casement window planer screen which is attached to a framing section permanently and would permanently block the view of an occupant through the casement window. The planer screen is released via a pin release in Figure 12C or with a pivot pin in Figure 12D moved in the directions indicated. Utilizing the same channels and stops therefore the present invention in Figures 13C and 13D provide for placing of a casement screen of the present invention in exactly the same manner as with the prior art constructions with the additional combination heretofore unknown of the framing section (13") including portions (13"b) for engaging the known hardware

Page 23

within the frame section and section (13"a) for providing for the guiding channel of the free end of a roll out screen assembly which has been integrated therewith.

As is normally required it is highly recommended that sealing portions (not shown) be provided for sections 12 and housing 14 disposed along the entire outside vertical edges thereof.

Referring now to Figures 1A, 2A, 3A, 4A, 6A, 7A, 8A, 9A, 10B, 10C, 11E and 11D there is illustrated the screen assembly (100) similar in all respects to screen assembly (10) as previously described with the difference being that the screen assembly (100) does not roll or slide within a track. The screen assembly (100) which includes sections (111, 112, 113) and housing (114) supported on brackets (120 and 122) and further assembled with the assistance of brackets (121 and 123) consistent with the previous patio door example, and utilizing the similar bracket (122) for example in Figure 6A and 7A which includes a leg (122x) which will be inserted within the framing sections (113 and 111) to assist with the assembly of the embodiment. As best seen in Figure 11D and 11E the conventional u-shaped section (200) is provided in a window assembly frame to which the window screen (100) will engage in a manner as shown in relation to Figure 10B and 10C consistent with previously described patio door embodiment with the section (200) being engaged by the leg (122b) of the window screen (100) having a roll screen as seen in Figure 11E contained within the housing (114) identical to Figure 11A in all respects except that it is now a window screen as opposed to a patio door screen. Therefore, Figures

11B and 11E are comparable and the reader is referred thereto for like parts, and the operation thereof with the exception of the sliding. The descriptions are very much the same. The essence therefore, is that the window screen assembly (100) will interfit within the frame section (200) provided adjacent the header and sill of a window closure assembly with the invention (100) including the roll out screen within housing (114) being guided via guides (g) within frame elements (111a and 113a) to and from the accumulated and the employed position. When the window screen requires replacement or repair, it can easily be removed from the channel (200), repaired or replaced by dropping the new screen or repaired screen in position.

The window embodiment of window screen (100) may also be utilized with the other examples provided in Figures 13A, B and C. A man skilled in the art would understand what minor modifications would have to be made to do so.

Therefore, in essence the present invention provides for a combination of features heretofore unknown allowing for installation of the various forms of the invention within the hardware and channel portions already provided with known window constructions, patio door constructions, and casement window constructions. The illustrations and descriptions in relation to Figures 12 and 13 are for illustrative purposes only and in no way limit the invention.

As many changes can be made to the preferred embodiments of the invention without departing from the scope thereof. It is intended that all matter contained herein be considered illustrative of the invention and not in a limiting sense.

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE AS FOLLOWS:

1. A sliding screen frame comprising framing sections and a screen housing from which a screen is payed out and accumulated, wherein said frame sections are adapted proximate the outer perimeter side to interfit with the track of the closure assembly to enable the screen frame to be slid across the opening of the closure assembly and the frame sections also being adapted to support the free end of the screen.

2. A sliding screen frame for a closure assembly, said screen frame being moveable between a position wherein the screen frame is in an opening blocking position to second position wherein one is free to pass through the door opening, said screen frame comprising framing sections and a housing wherein a screen is contained and payed out , said framing sections having two sides, a first side adapted to receive the free end of the screen, and the other side adapted to engage with channels, tracks, hardware or the like of the closure assembly, wherein said screen has a free end being moveable across the screen frame from an accumulated position within the housing, to a fully payed out extended position, the free end of the screen riding within the first side of the framing section.

3. A screen frame for a closure assembly, said frame comprising framing sections and a housing for paying out and accumulating a screen, said framing sections have a first and second side, the screen being moveable and guided by the first side of the framing sections between a fully extended position, whereat the screen is substantially payed out from said housing, and a fully retracted position within the housing; wherein the screen frame is adapted, proximate the second side of the framing section, to engage with channel, track or hardware disposed with the closure assembly whether the screen is at the fully extended or the fully retracted position.

4. A sliding screen frame comprising frame members including an integral roll out screen housing, said frame members being adapted to allow said frame to slide across a closure frame as well as providing a support for the free end of the roll out screen.

5. The screen frame of claim 4 wherein said frame members includes rollers or wheels to assist with the sliding motion of the screen frame across the closure frame opening.

6. The screen frame of claim 5 wherein the rollers or wheels are included with a support bracket for supporting the roll screen in said housing.

7. The screen frame of claim 6 wherein the bracket includes a section to engage the frame member proximate the corners to assemble the members into the screen frame and to house the roller for movement on the track of header and sill sections of the closure assembly.
 8. The screen frame of claim 6 or 7 wherein the bracket also includes supports within the brackets, opposite the rollers or wheels, to engage the roll tube of the roll screen.
 9. A screen frame comprising framing sections and a screen housing, each section including an inner portion adapted to be used as a guide for the free end of the screen and an outer portion adapted to engage with channel, track or hardware disposed with closure assembly whether the screen is at the fully extended or the fully retracted position.
 10. A frame member for a screen frame including a housing from which a screen is payed out and accumulated, said member comprising a first portion adapted for engagement with window and door frame hardware, channels, tracks and the like; and a second portion adapted to guide the free end of the screen.
 11. A kit of components for a screen frame comprising framing members, a screen housing, and a screen contained in and payed out from said housing, said framing members being firstly adapted to engage with window and door frame hardware,
-

channels, tracks and the like; and also being adapted to guide the free end of the screen.

12. A kit of components comprising framing sections, a housing for a roll screen, and a roll screen, said kit being assembled to provide the screen frame of any previous claim.

13. A screen frame construction comprising framing sections and a screen housing from which a screen is payed out and accumulated, said frame sections being adapted proximate the outer perimeter side to interfit with channels, tracks and hardware for windows and doors, and said frame sections being adapted proximate the inner side to provide a guide for the screen as it is payed out from the housing .

14. The screen frame of claim 13 wherein said screen is a roll screen.

15. The screen frame of claim 13 or 14 wherein said channels, tracks and hardware for windows and doors are conventional and well known.

16. A support bracket for a roll screen which comprises a support for said roll screen proximate one end of the bracket and an integral roller or wheel mounting part proximate the other end of the bracket.

17. The bracket of claim 16 wherein said bracket is made from nylon, plastic, Delrin® or the like.
18. The screen frame of any proceeding claim wherein the closure assembly is a casement window.
19. The screen frame of any proceeding claim wherein the closure assembly is a sliding window.
20. The screen frame of any proceeding claim wherein the closure assembly is a tilt and slide window.
21. The screen frame of any proceeding claim wherein the closure assembly is a double hung window.
22. The screen frame of any proceeding claim wherein the closure assembly is a patio door.
23. The screen frame of any proceeding claim wherein the closure assembly is a pivoting door.
24. The screen frame of any proceeding claim wherein the closure assembly is an awning window.

1/22

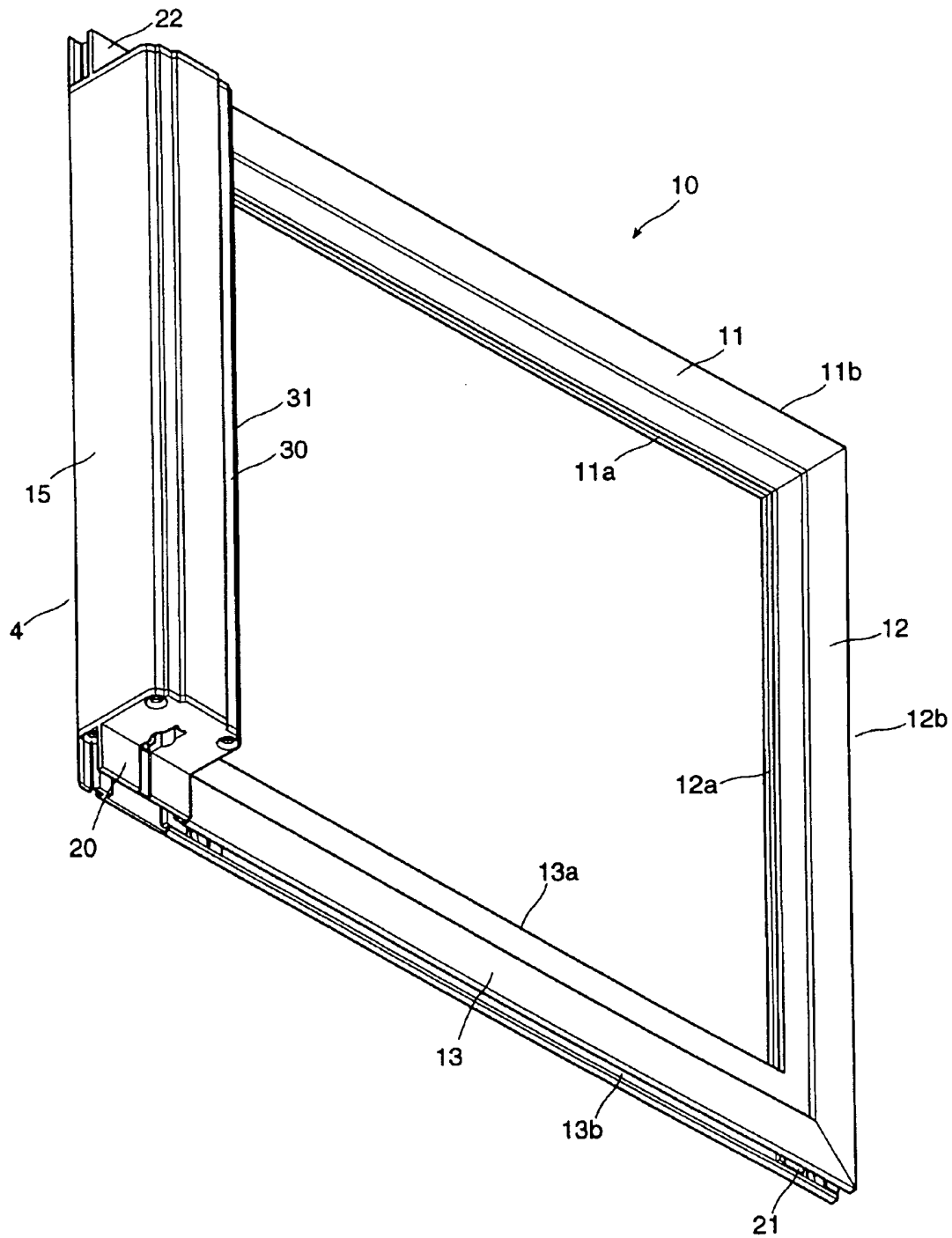


Figure 1

2/22

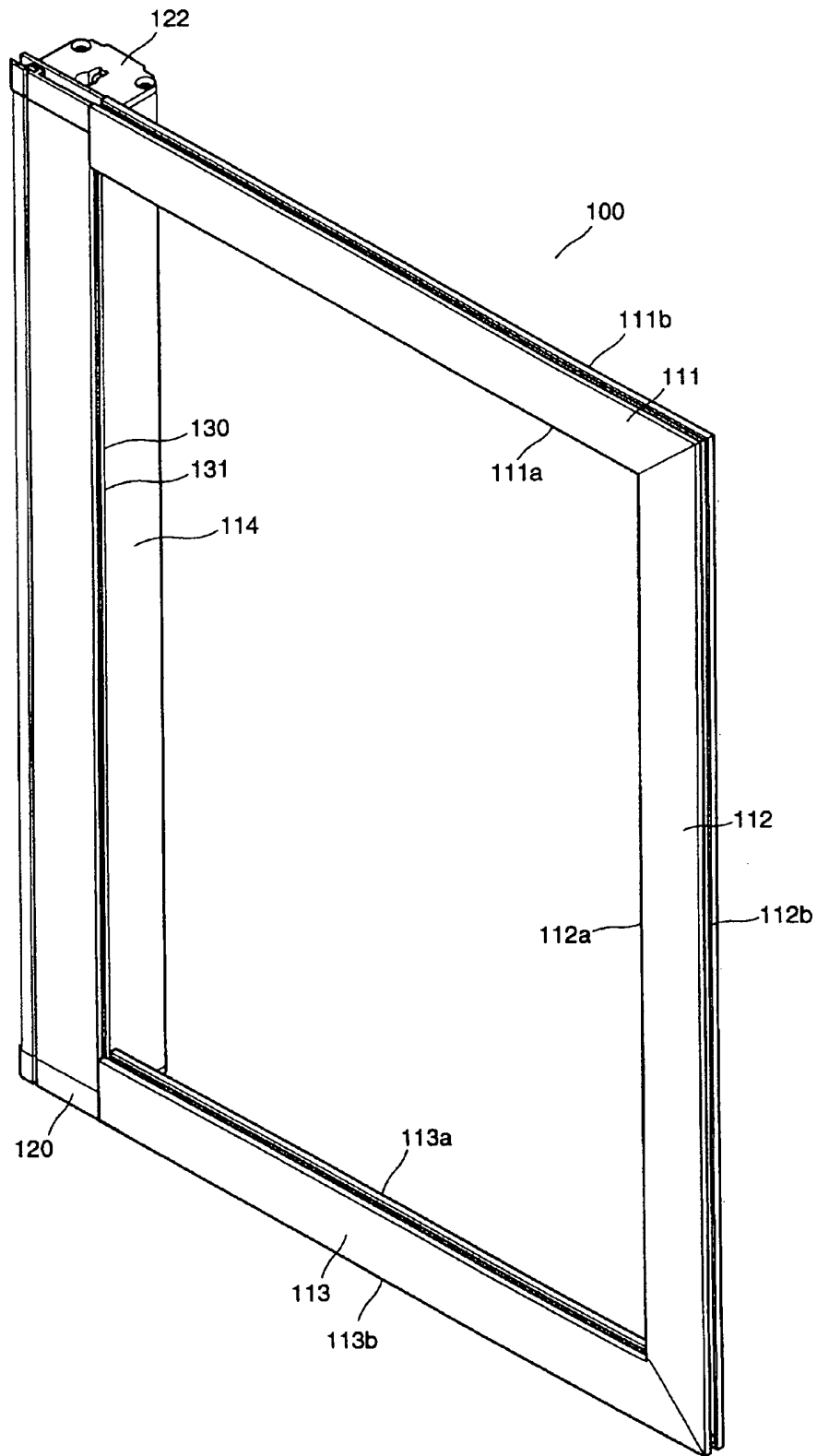


Figure 1A

3/22

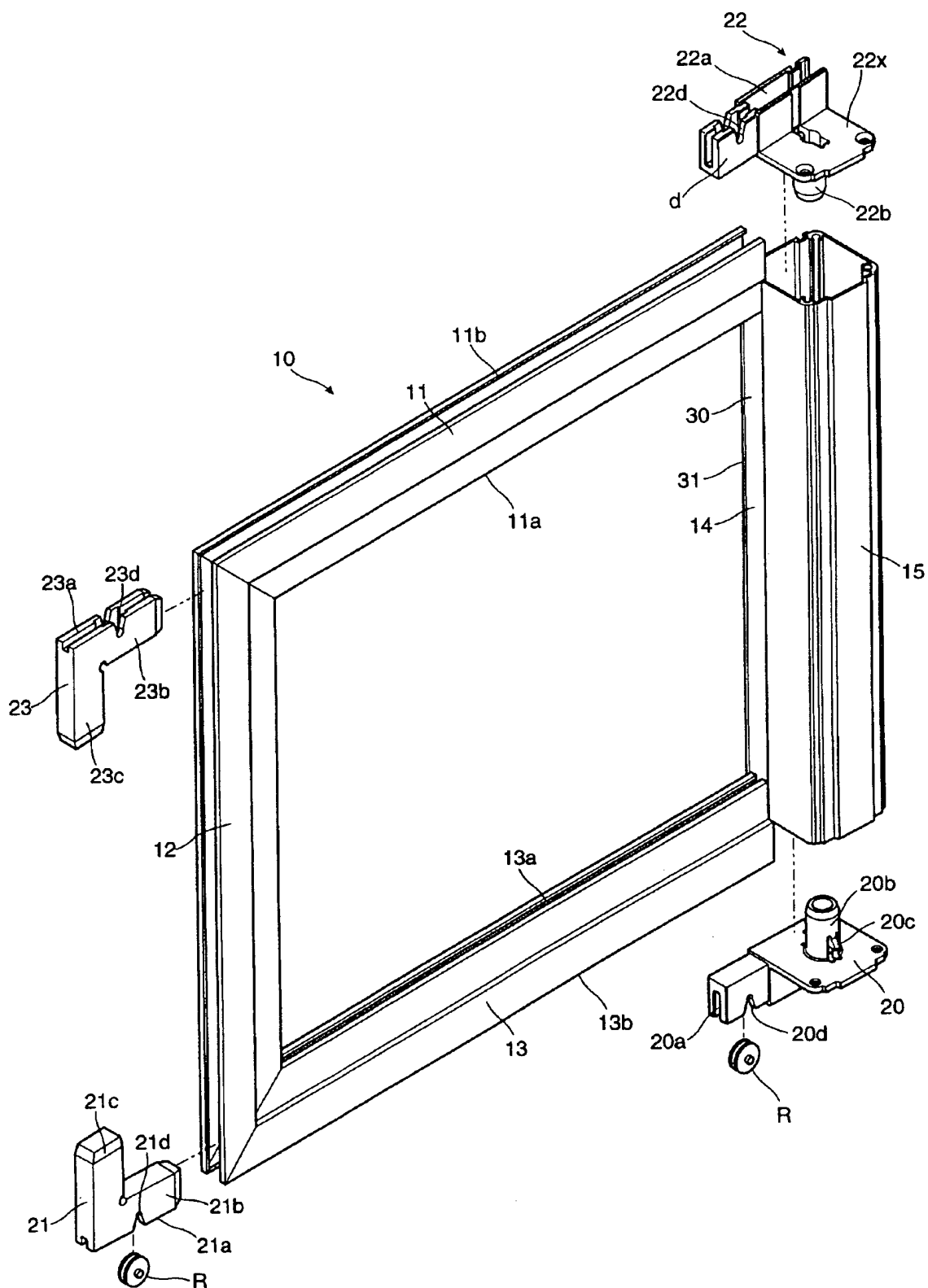


Figure 2

4/22

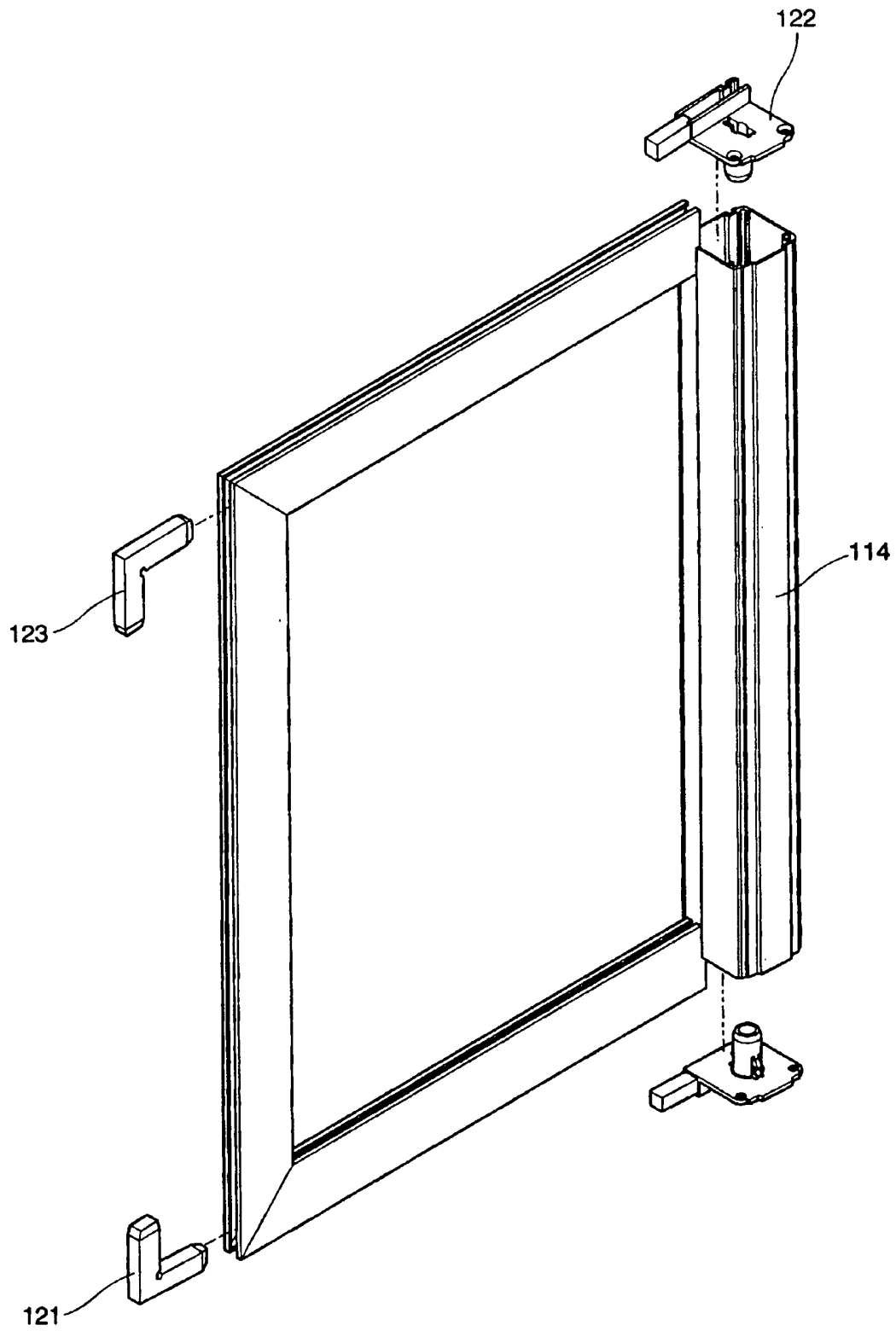


Figure 2A

5/22

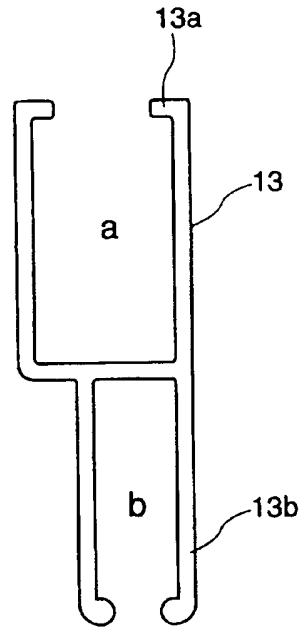


Figure 3

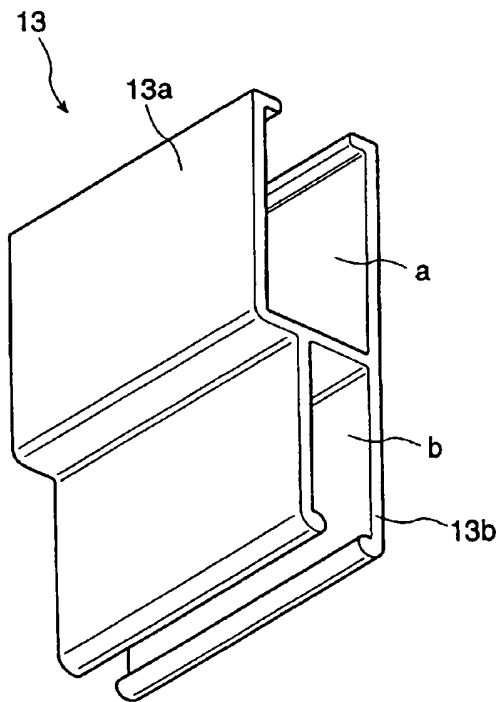


Figure 4

6/22

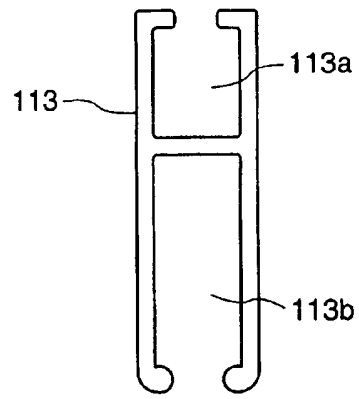


Figure 3A

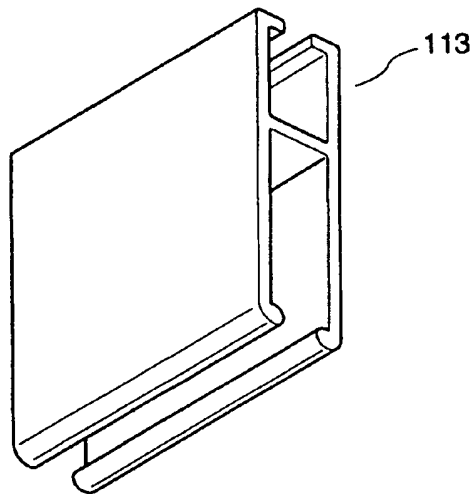


Figure 4A

7/22

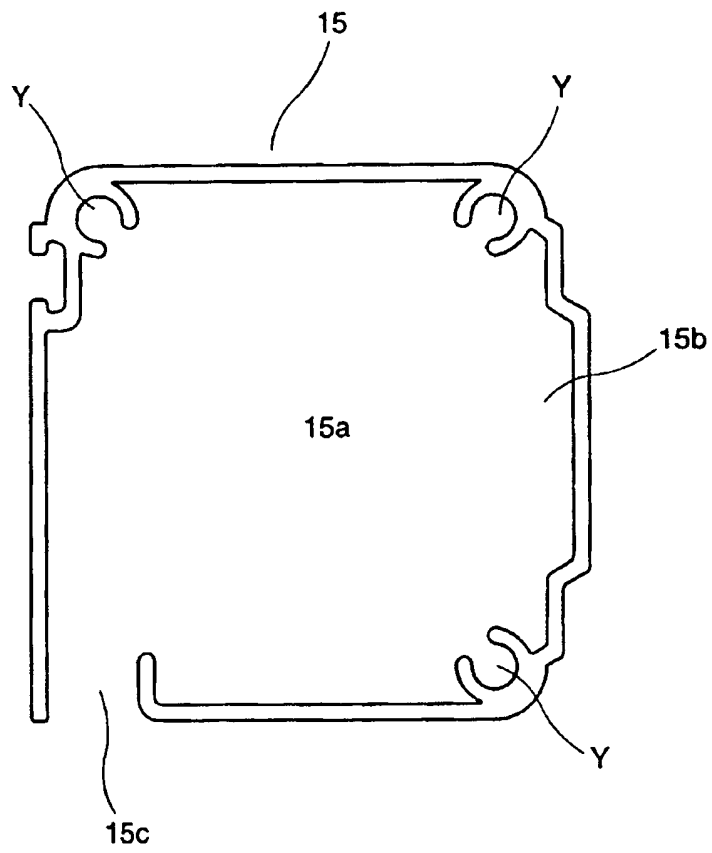


Figure 5

8/22

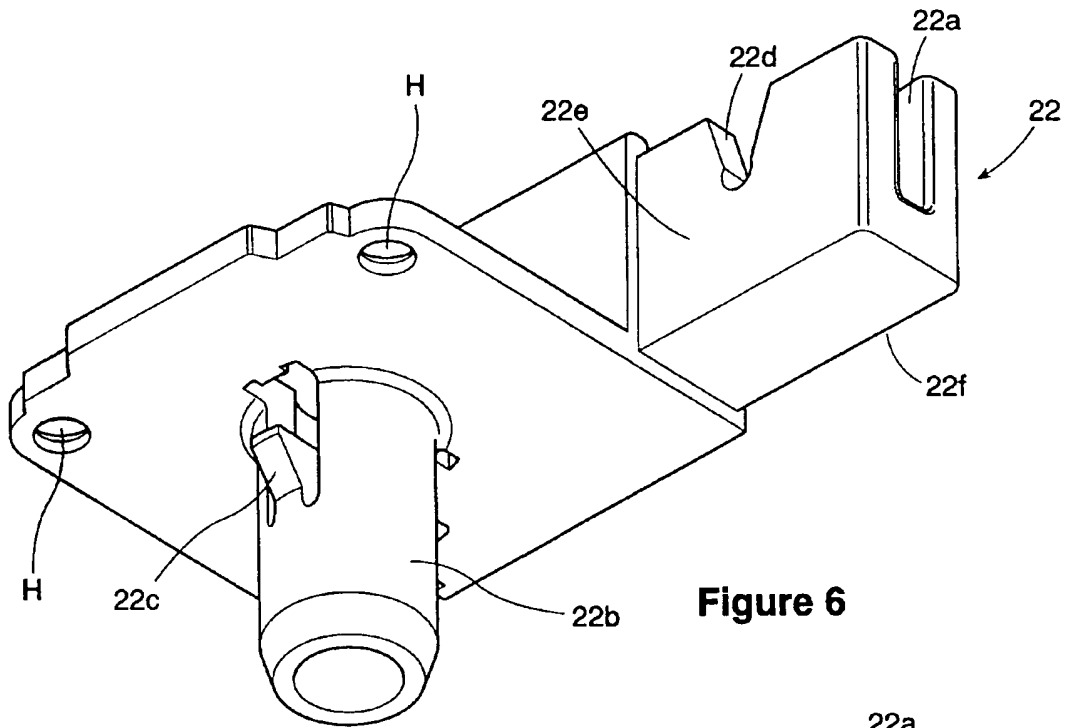


Figure 6

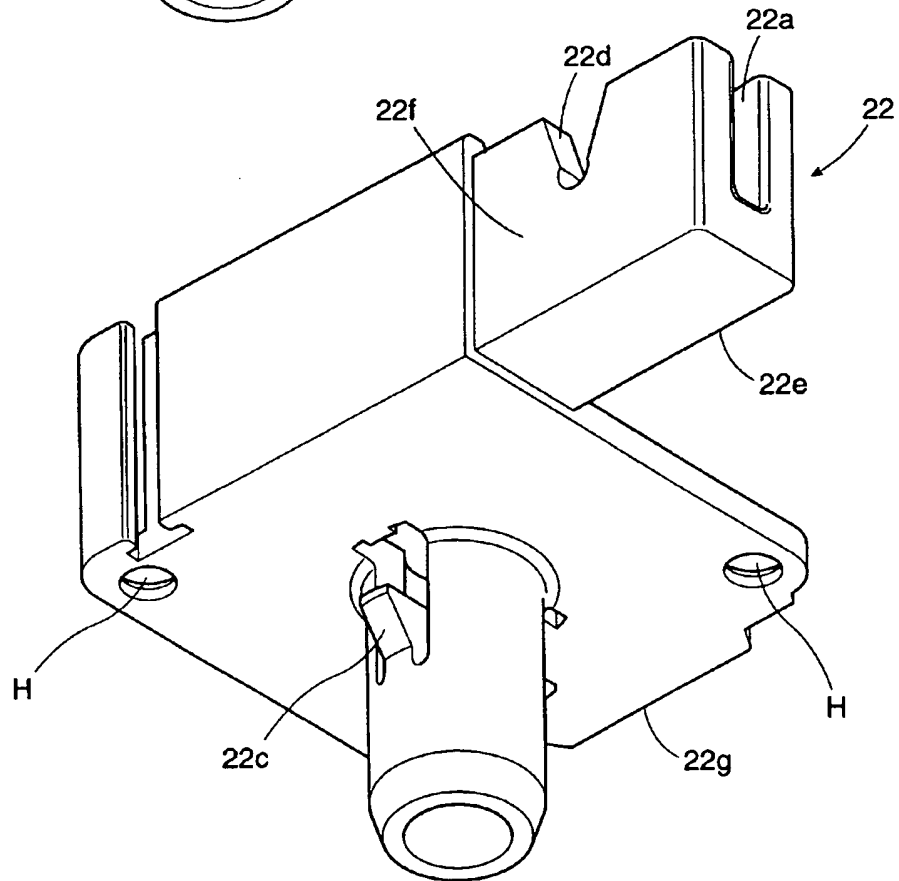


Figure 7

9/22

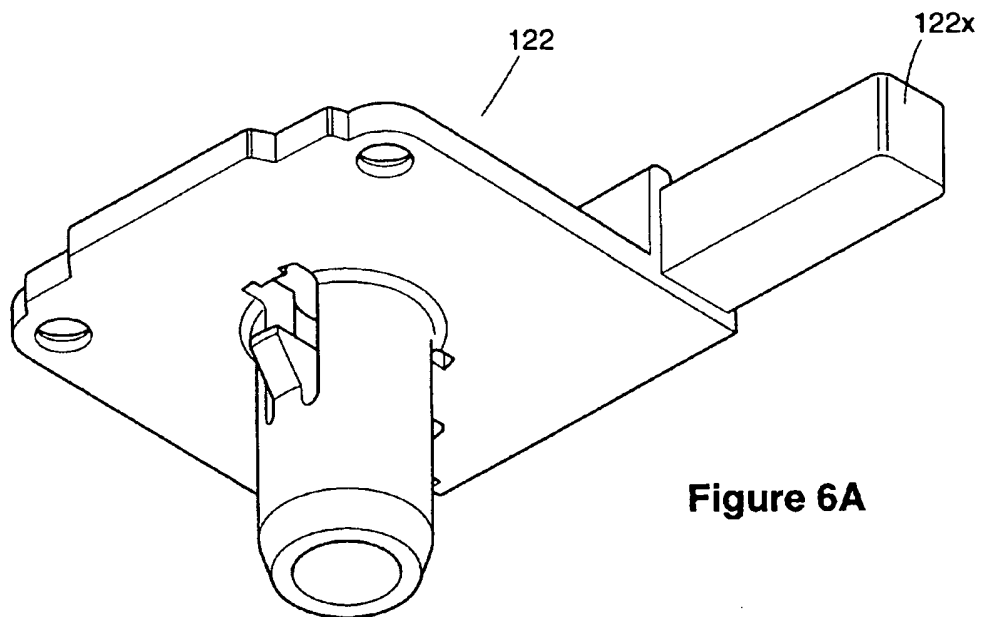


Figure 6A

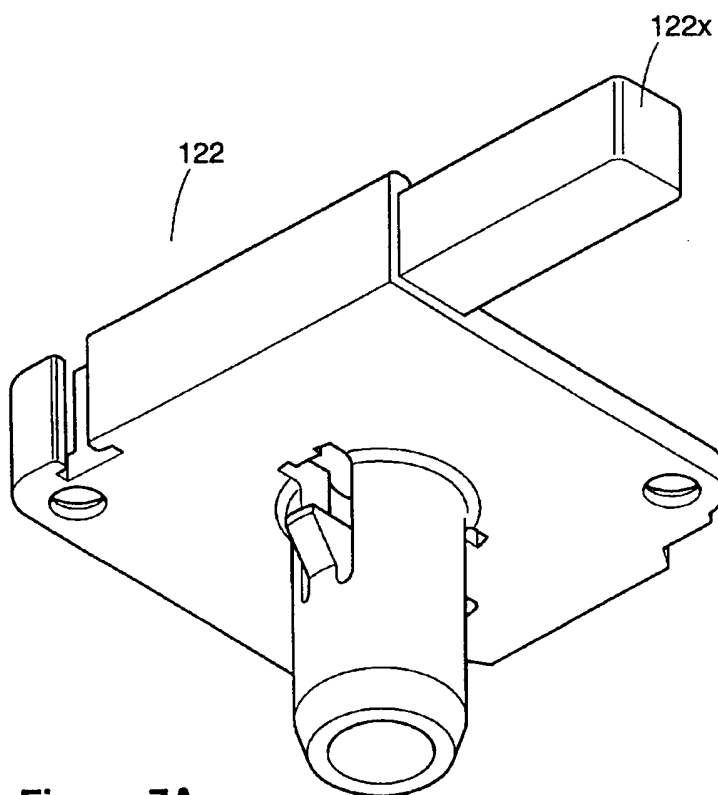
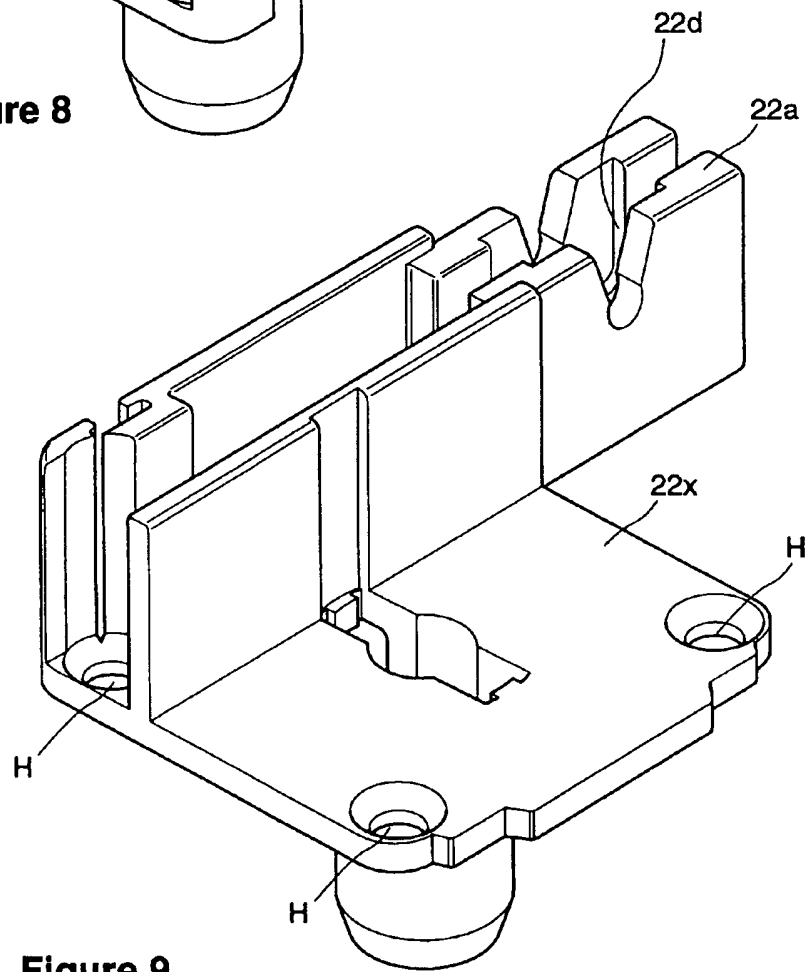
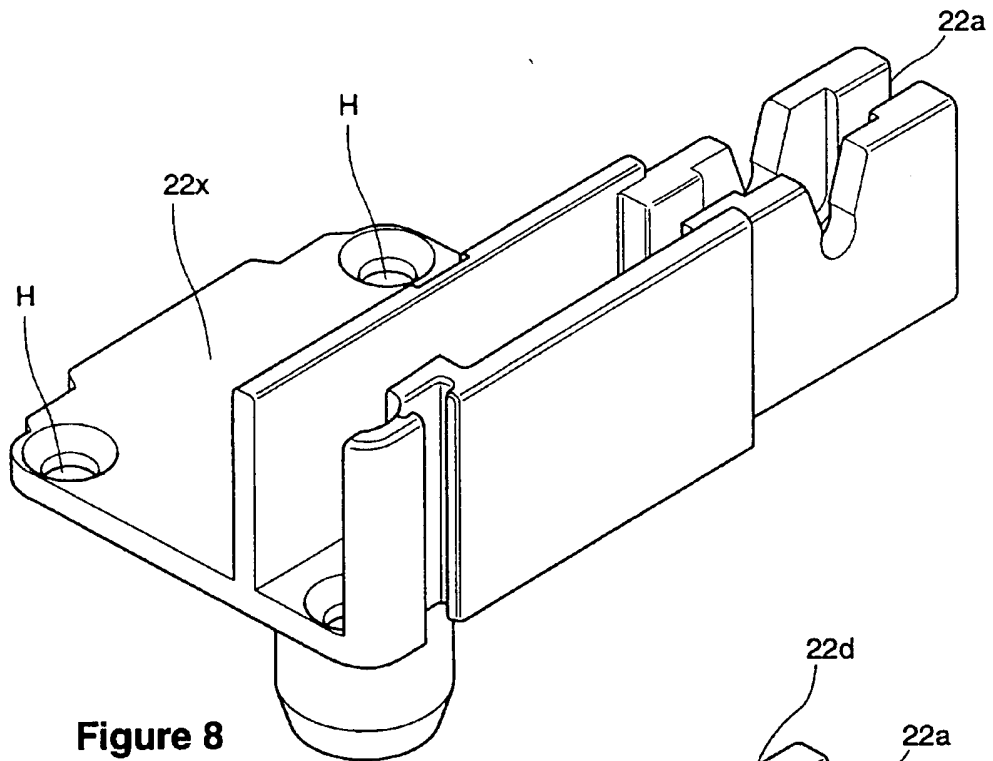
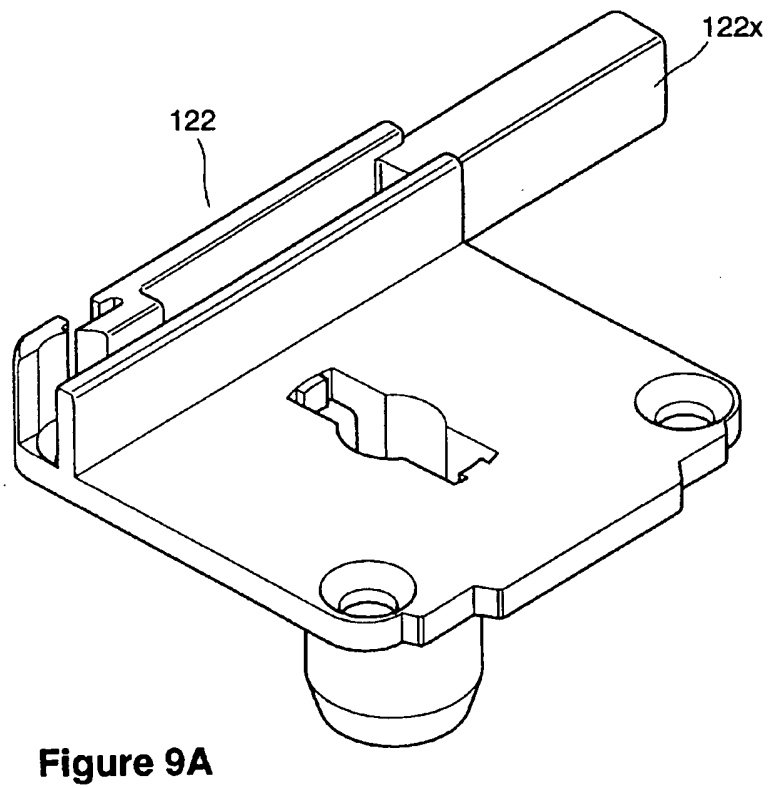
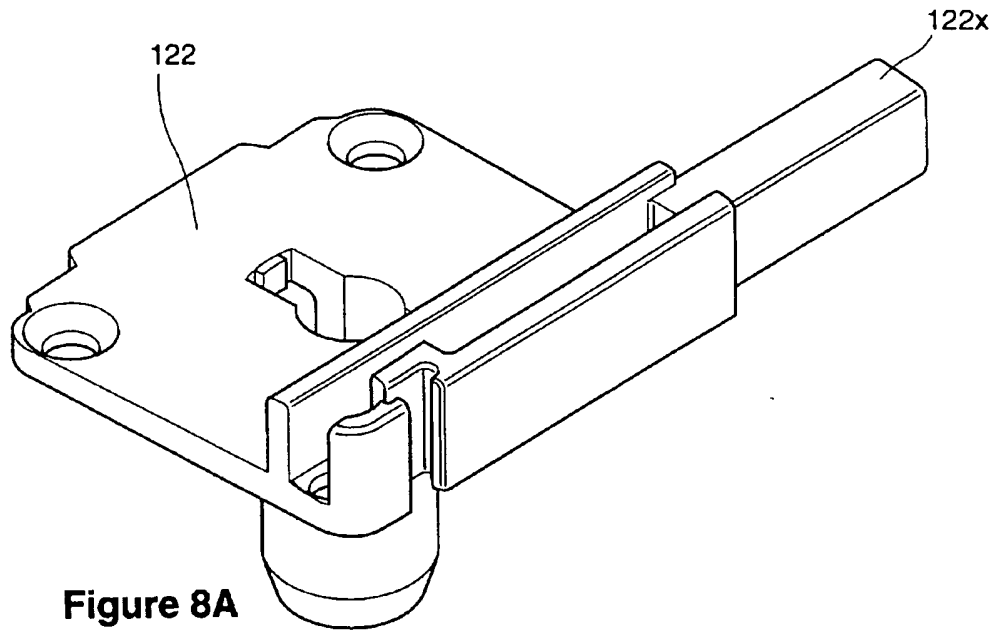


Figure 7A

10/22



11/22



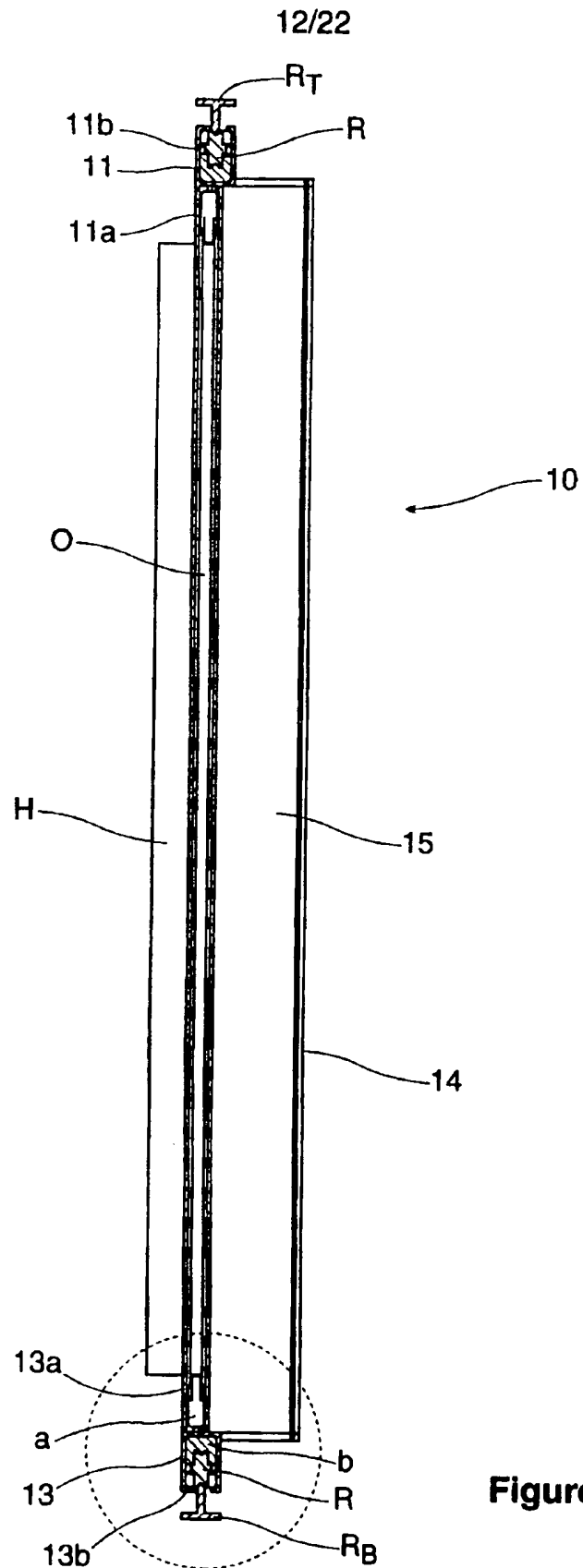


Figure 10

13/22

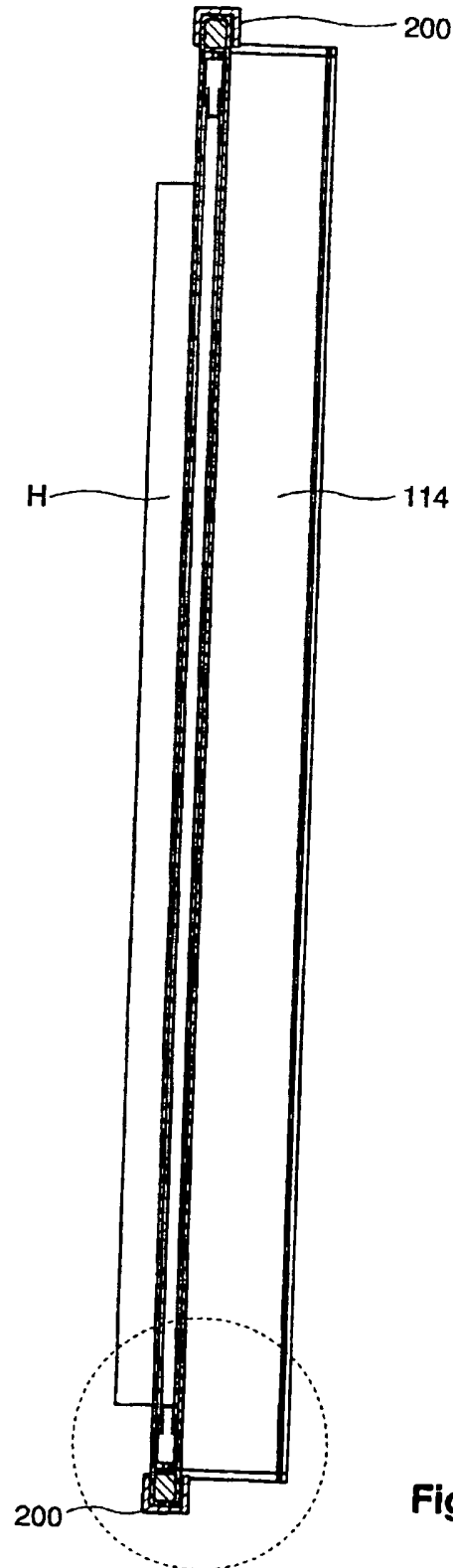


Figure 10B

14/22

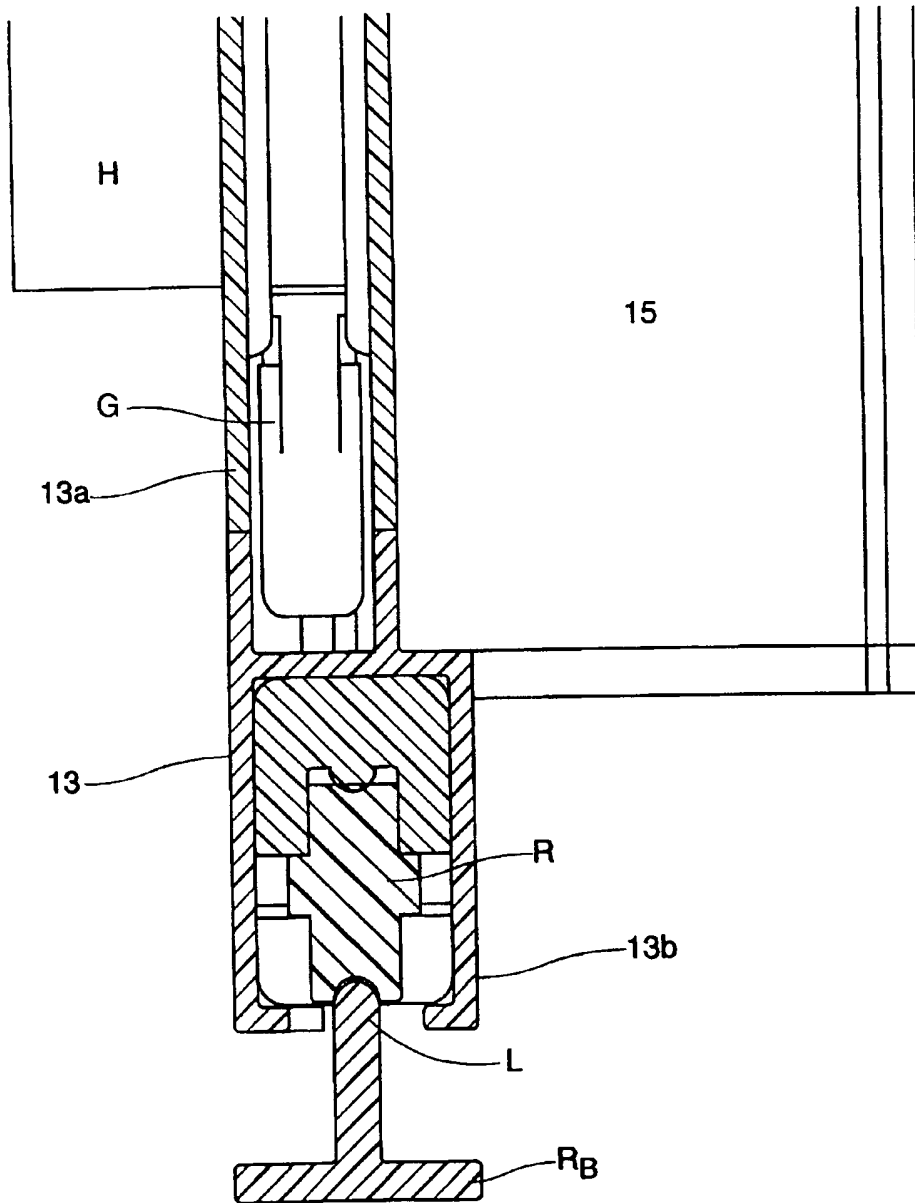


Figure 10A

15/22

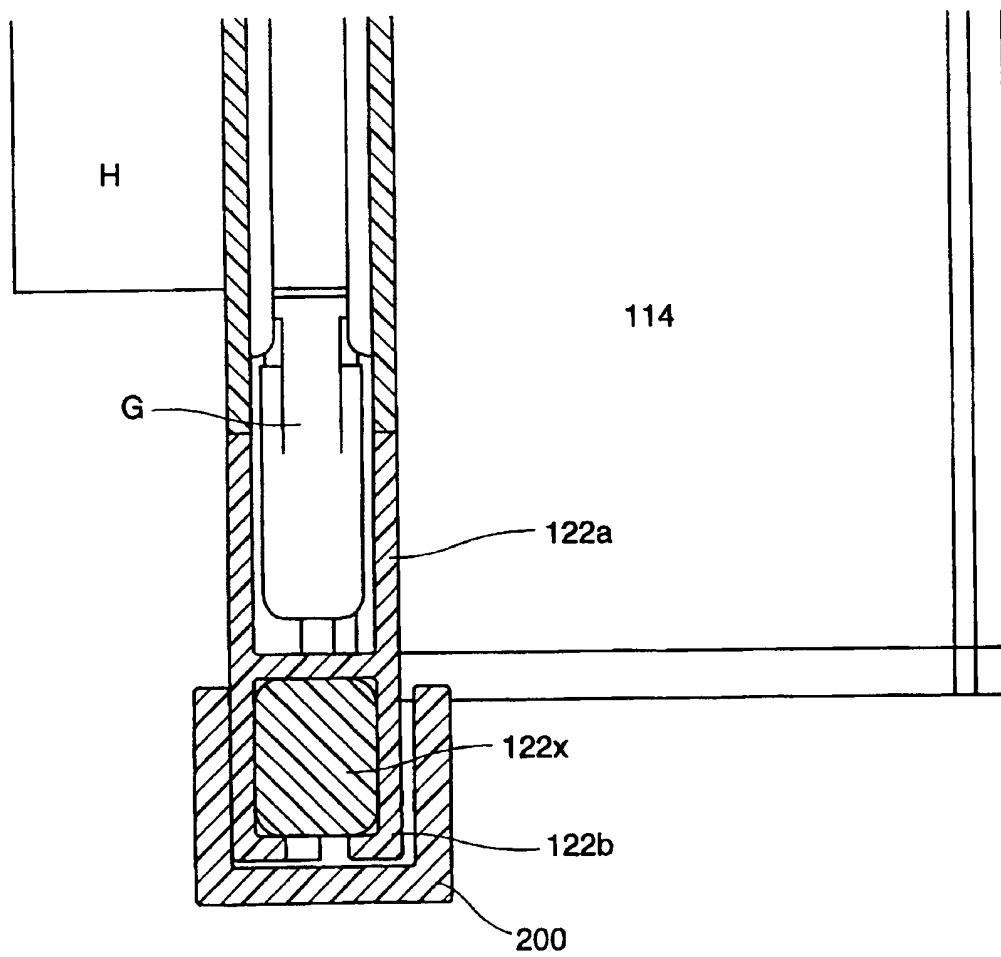


Figure 10C

16/22

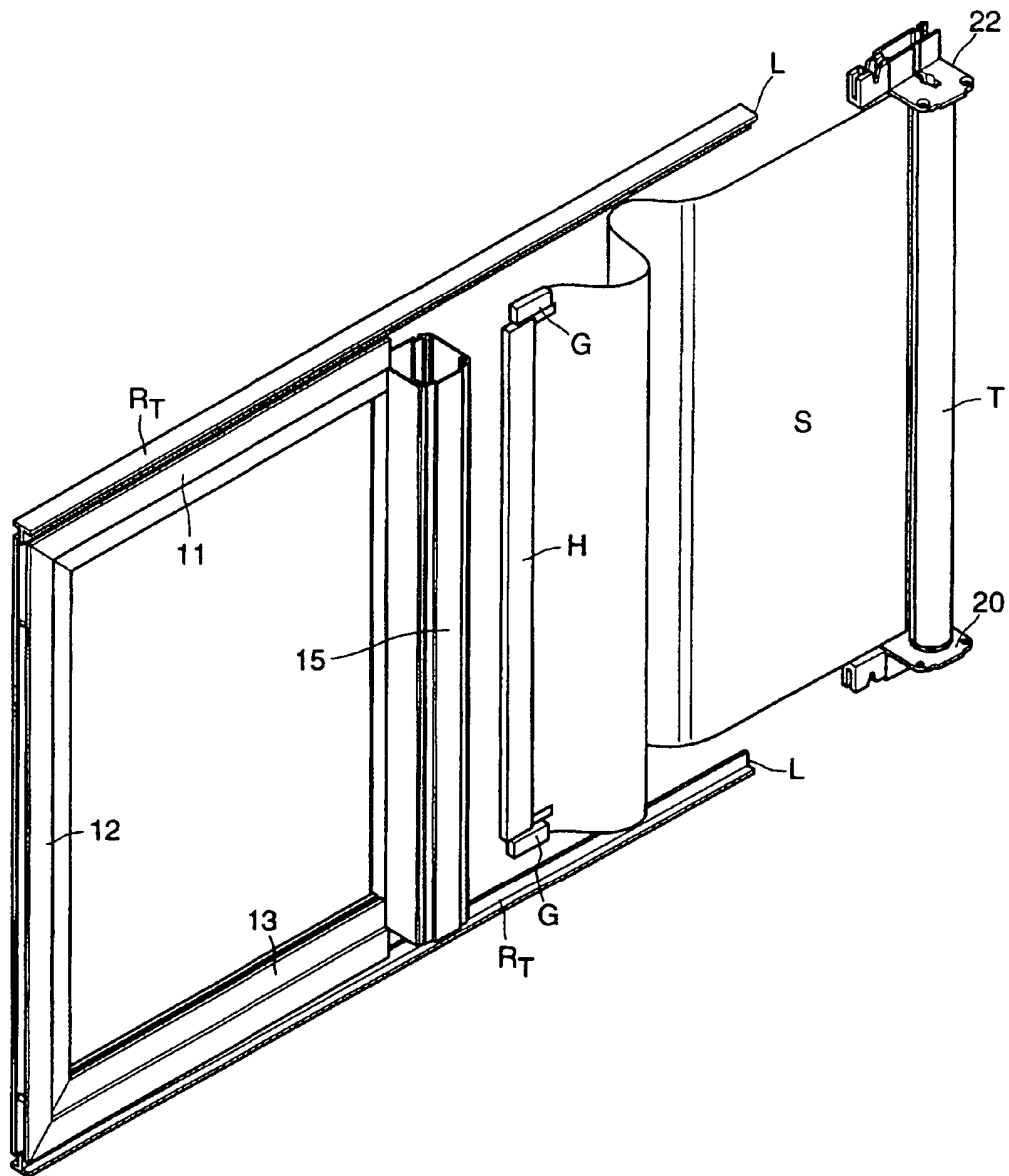


Figure 11

17/22

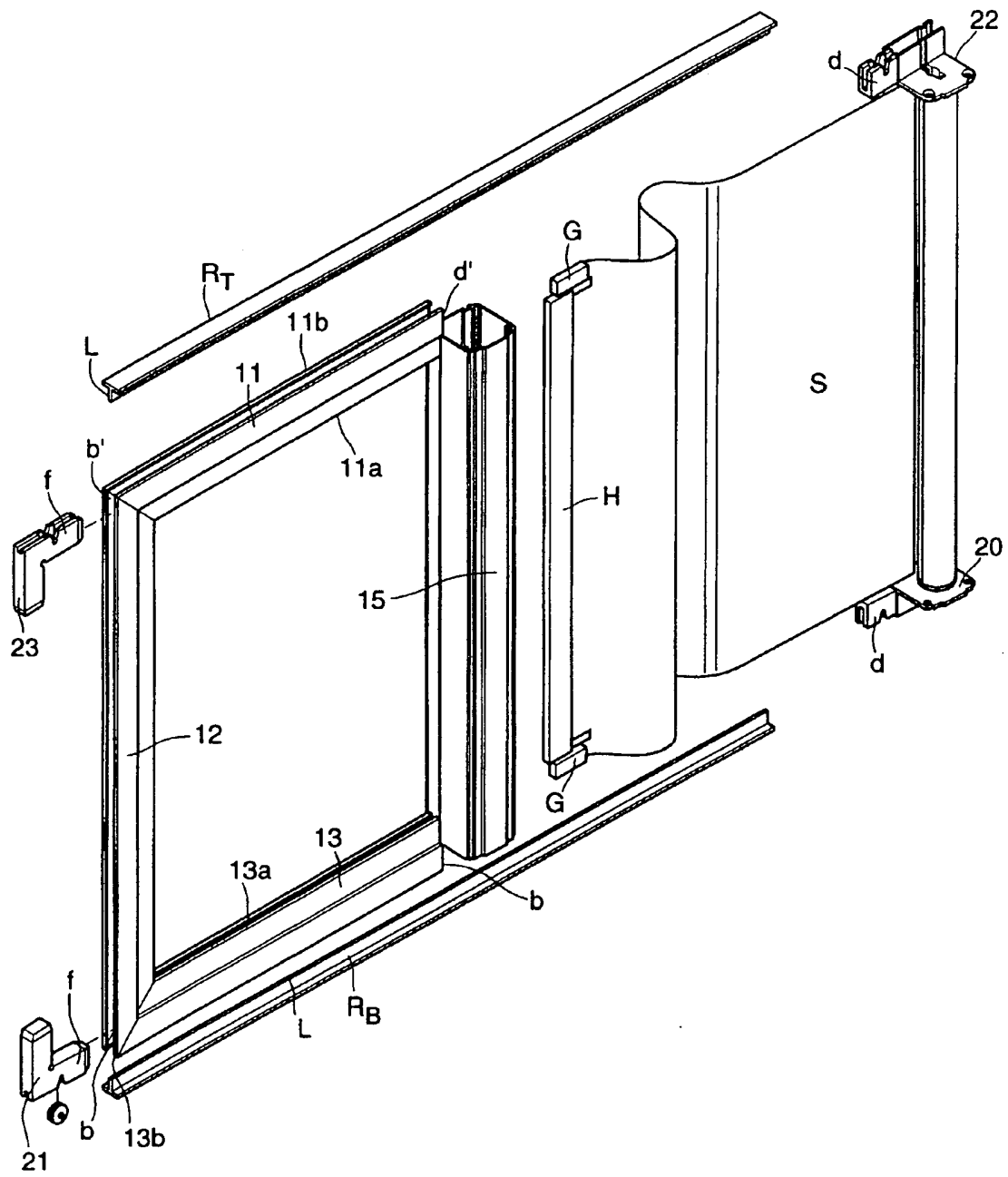


Figure 11A

18/22

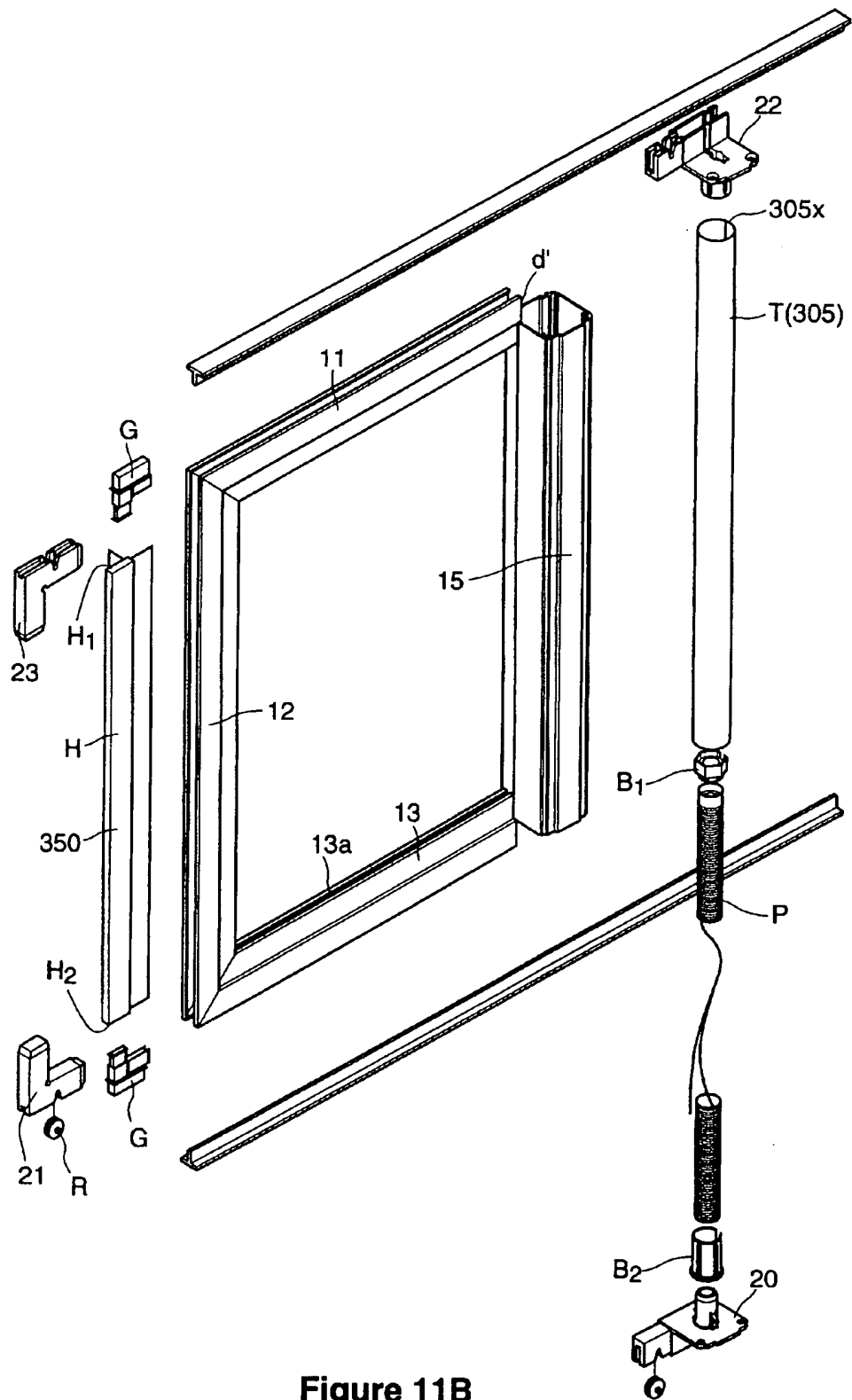


Figure 11B

19/22

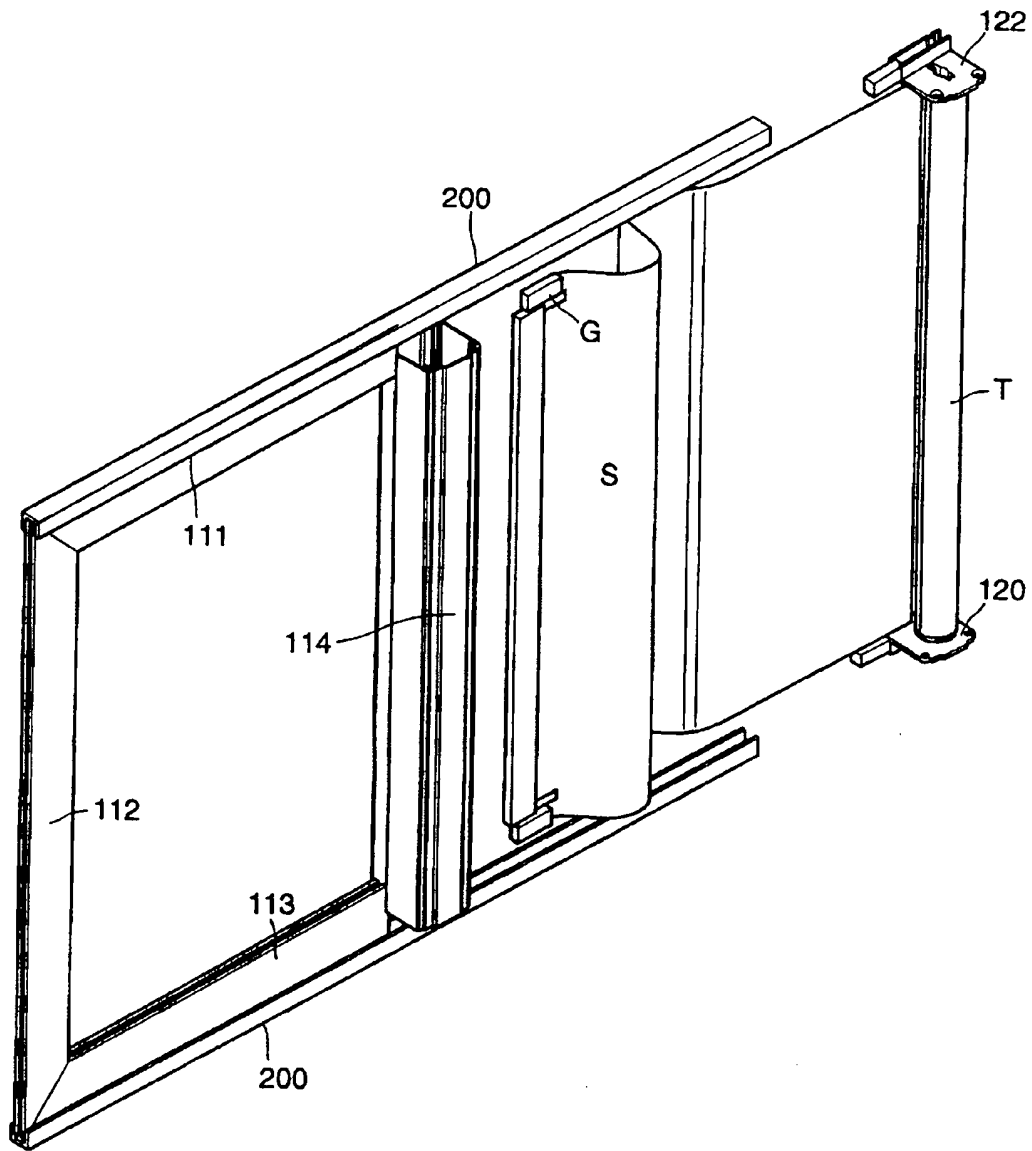


Figure 11D

20/22

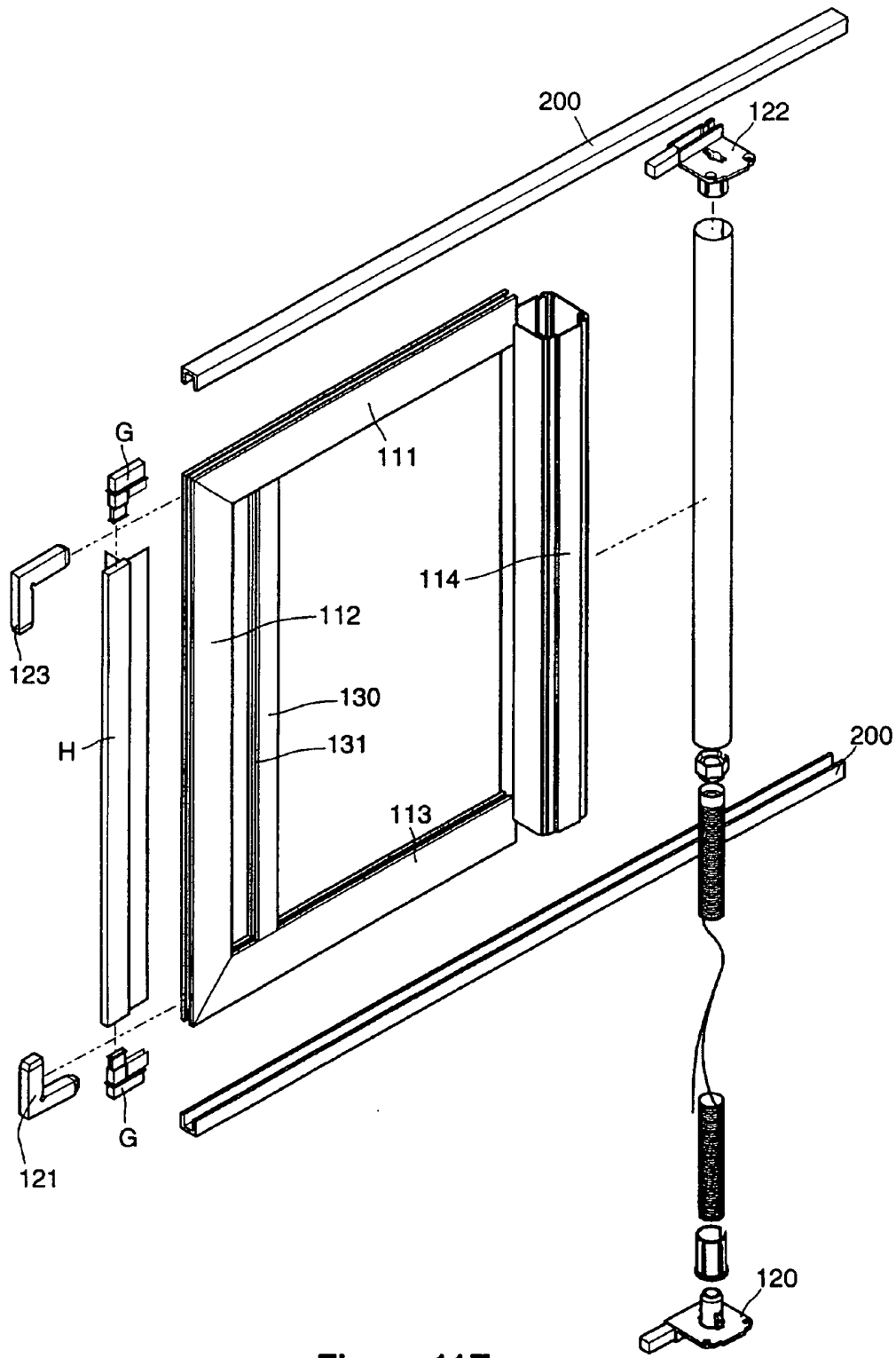


Figure 11E

21/22

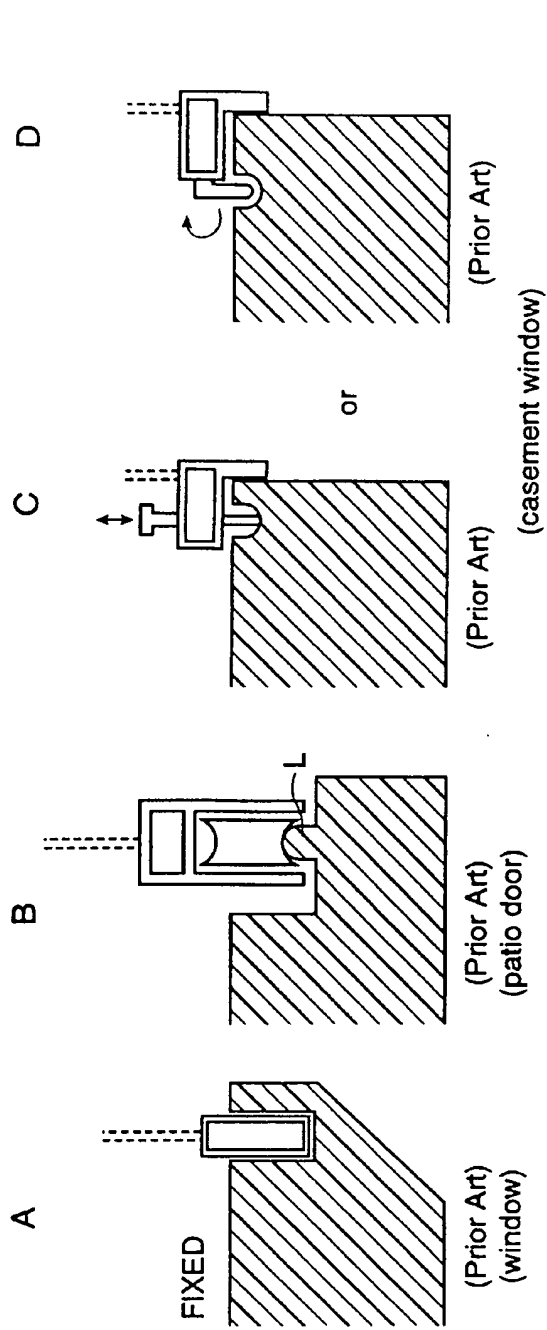


Figure 12

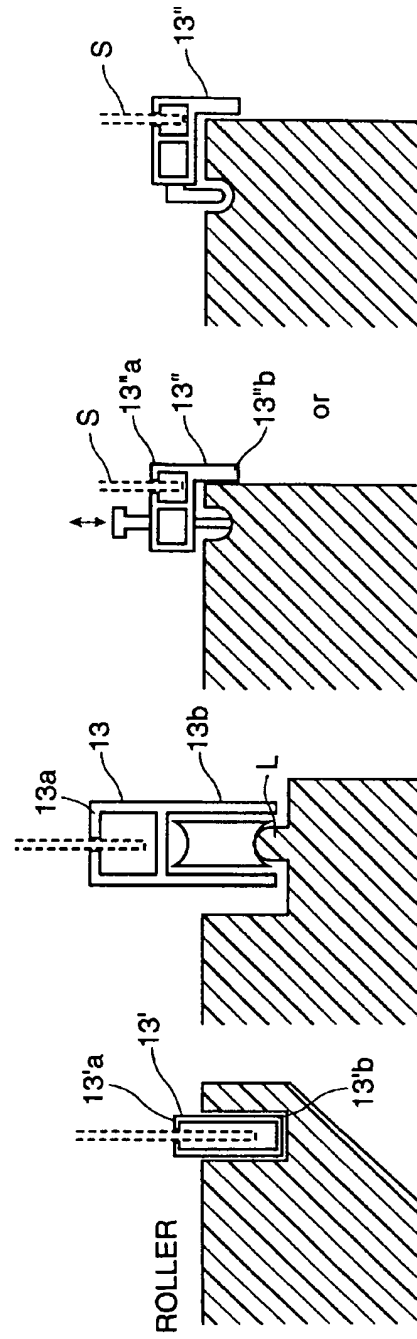


Figure 13

22/22

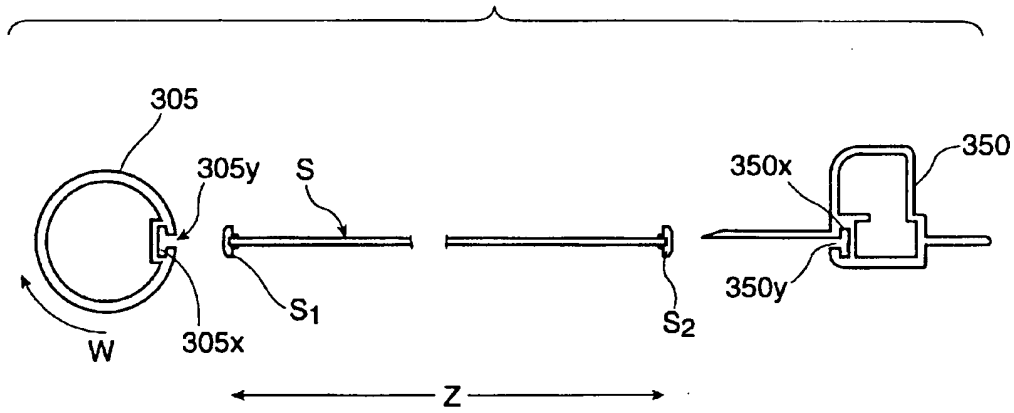


Figure 14

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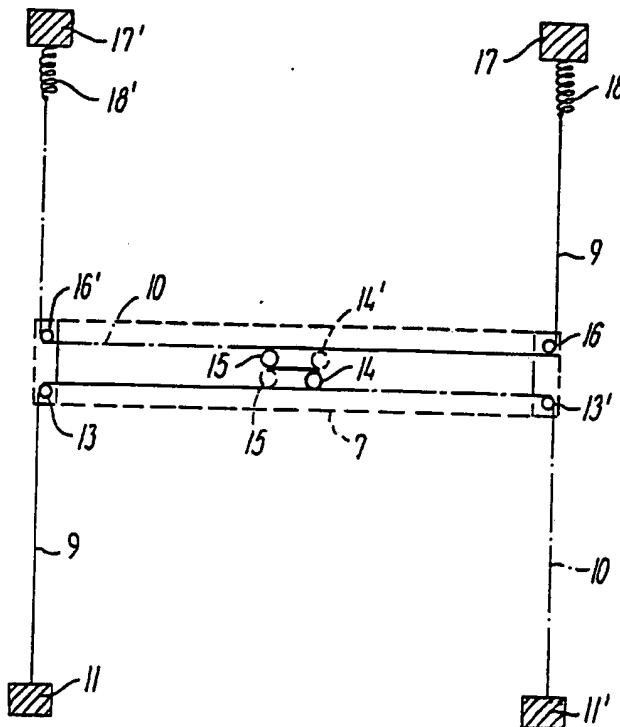
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(21) International Application Number: PCT/DK93/00090 (22) International Filing Date: 10 March 1993 (10.03.93) (30) Priority data: 0322/92 11 March 1992 (11.03.92) DK (71) Applicant (for all designated States except US): V. KANN RASMUSSEN INDUSTRI A/S [DK/DK]; Tobaksvej- en 10, DK-2860 Søborg (DK). (72) Inventors; and (75) Inventors/Applicants (for US only) : KOLD, Ove [DK/DK]; Skolevænget 22, Borris, DK-6900 Skjern (DK). MIK- KELSEN, Torben [DK/DK]; Østre Allé 79, DK-6900 Skjern (DK). (74) Agents: RAFFNSØE, Knud, Rosenstand et al.; Interna- tionalt Patent-Bureau, Høje Taastrup Boulevard 23, DK- 2630 Taastrup (DK).		(81) Designated States: AU, CA, CZ, FI, HU, JP, NO, NZ, PL, SK, US, European patent (AT, BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i> <i>In English translation (filed in Danish).</i>
(54) Title: A ROLLER BLIND, PARTICULARLY FOR USE AS BLACKOUT SHADE (57) Abstract For a roller blind, particularly for use as a blackout shade, and with a spring-biassed roller bar and a blind (23) rolled on the roller bar and having along its lateral edges guide members (5, 6) guided in tracks in guide rails disposed at both sides of the window opening, and a bottom bar, a brake device is provided for retaining the bottom bar (7) in an arbitrary position against the effect of said bias-force by means of a cord arrangement with a cord (9, 10) which at the bottom of one guide rail (5, 6) is passed through said guide rail, the bottom bar (7) and the other guide rail (6, 5) to a fixture means (17, 17') at the top thereof. As friction means (14, 15, 14', 15') acting on the cord two pins (14, 15, 14', 15') are mounted in the bottom bar (7) over which the cord (9, 10) is passed in S-shape. To ensure parallel guidance of the bottom bar (7) in relation to the roller bar the cord arrangement may include two cords (9, 10) mounted in mirror-inversion.		



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A ROLLER BLIND, PARTICULARLY FOR USE AS BLACKOUT SHADE.

The invention relates to a roller blind, particularly for use as a blackout shade, comprising a spring-biassed roller bar designed to be mounted at the top of a window opening and a blind rolled on the roller bar and having along its lateral edges guide members guided in tracks provided in guide rails disposed at both sides of the window opening, a bottom bar for the blind being likewise provided, at both ends, with guide means engaging guideways in said guide rails, and being further controlled by means of a cord arrangement with a cord which from a fixture means at the bottom of one guide rail is passed through the part of said guide rail positioned beneath the bottom bar, the bottom bar itself, and the part of the other guide rail positioned above the bottom bar, to a fixture means at the top of the other guide rail.

In roller blinds to be mounted in connection with skylights in inclined roofs use is made of a spring-biassed roller bar ensuring that the blind is kept tight in all positions between the completely raised position and the maximum drawn bottom position.

In order to enable the bottom bar to be arrested in its bottom position and in a number of intermediate positions it is known to mount side rails along the longitudinal sides of the window frame, the side rails being provided with downwards facing recesses for engagement with pins or the like at the ends of the bottom bar. This makes it possible to retain the bottom bar in a limited number of intermediate positions.

Such comparatively simple side rails are, however, not usable in connection with blinds for blackout shades of the above mentioned type, in which the side guide rails must be designed so as to ensure light-proofness at the edges of the window. At the top

and at the bottom of the window opening light-proofness is obtained by providing the roller bar, which is most frequently enclosed in a cassette, as well as the bottom bar with appropriate sealing strips.

5 In US-A-785 806 a roller blind of the above mentioned type is disclosed in which the movement of the bottom bar is controlled by a double cord arrangement ensuring parallel guidance of the bottom bar in relation to the roller bar, thereby preventing the bottom
10 bar from getting jammed due to careless operation.

 In comparison with the prior art it is the object of the invention to provide a design of a roller blind, particularly for blackout shading, which makes it possible to retain the bottom bar against the spring
15 bias force exerted on the roller bar in arbitrary positions between the top position and the bottom position.

 With a view to this, a roller blind of the above mentioned type is characterized in that a brake device
20 for retaining the bottom bar in an arbitrary position against the effect of said spring bias includes a friction member mounted in the bottom bar and acting on the cord, a device for tightening the cord being provided in association with one of said fixture means.

25 With such a comparatively simple frictional brake device it has turned out to be possible to obtain a braking force which in any position of the bottom roller is sufficient to equalize the spring bias force. As it appears from the following the frictional brake
30 device may be made to cooperate with the cord tightening member and the spring bias of the roller bar in such a manner that the brake force does not reduce the operational comfort.

 In a preferred embodiment of the invention the
35 means for parallel guidance include a supplementary cord arrangement passed through the guide rails and the

bottom part, in reverse mounting in relation to said cord.

The invention will now be explained in detail with reference to the schematical drawings, in which

5 Fig. 1 shows a skylight equipped with a roller blind as a blackout shade, provided according to an embodiment of the invention,

Fig. 2 is a cross-section of a side guide rail,

10 Fig. 3 is a schematical diagram of a brake device and a device for parallel guidance with two mirror-inverted cord arrangements, and

Figs 4 and 5 illustrate a holder for friction members for the two cord arrangements, designed to be mounted in the bottom bar of the roller blind.

15 In the roller blind for a blackout shade illustrated in Fig. 1 a spring-biassed roller bar, not shown in detail, is enclosed in a cassette 1 mounted atop the window opening in such a manner that it fits light-proof to the window main frame. A blind 2 of light-
20 proof material is rolled on the roller bar. Guide members, e.g. in the form of semispherical buttons 3 which, as illustrated in Fig. 2, are guided in tracks 4 provided in guide rails 5 and 6 disposed at
25 either side of the window opening are in a manner known per se spaced apart along both of the lateral edges of the blind 2, at distances which may for instance vary from 3 to 10 cm.

At the bottom the blind is fastened in a bottom bar 7 having guide means at the ends, likewise
30 engaging guideways 8 in the guide rails 5 and 6.

Since due to the spring bias acting on the roller bar the blind is constantly biassed in the raising direction in order to be kept tightened, an arresting mechanism is needed to retain the drawn blind
35 2 in the bottom position of the roller bar 7 as well as in intermediate positions.

In order to obtain an stepless variable arresting in arbitrary positions of the bottom bar 7, said arresting mechanism includes a brake device of which an embodiment is illustrated in Fig. 3.

5 In this case the brake device comprises a mirror-inverted arrangement of two cords 9 and 10, of which the cord 9 shown in solid lines in the figure is passed from a fixture means 11 at the bottom of the left guide rail 5 up through a track 10 12 in this guide rail, shown in Fig. 2, and over a roller or pin 13 through the bottom bar 7 in which a friction member acting on the cord in the illustrated embodiment includes two pins 14 and 15 around which the cord is passed in S-shape and from there further on 15 to the opposite end of the bottom bar 7, from where it is passed over a roller or pin 16 through the part of the guideway 12 positioned above the bottom bar 7 of the right slotted guide 6 to a fixture means 17 at the top of said slotted guide.

20 The fixture means 11 and 17 may appropriately be provided in retaining means, e.g. a plastic plug, that may be inserted at the bottom of the guide rail 5 and a clip-like plug that may be mounted at the top of the guide rail 6. With the view of tightening the cord 25 9, the upper end thereof is connected with a tension spring 18 mounted in the fixture means 17.

As mentioned above, the cord 10 is mirror-inverted in relation to the cord 9, and the fixture and cord guiding means for this cord have the same 30 reference numerals as the corresponding members for the cord 9, but further marked with an apostrophe.

This double cord arrangement provides for obtaining both an effective braking capable of retaining the bottom bar 7 arrested in an arbitrary position 35 between the top and the bottom, and an accurate parallel guidance of the bottom bar 7 in relation to the roller bar mounted in the cassette 1.

The braking effect is caused by the S-shaped twisting of the cords 9 and 10, respectively, around the pins 14, 15 and 14', 15', respectively, the friction between the cords and said pins and the tension exerted by the springs 18 and 18'.

As regards the equilibrium as to force of the system the following formula applies to both of the cords 9 and 10

$$S_1 = S_2 \cdot e^{\mu \cdot \alpha}$$

wherein S_1 and S_2 are the cord tension before and after the cord is passing the pins 14, 15 and 14', 15', respectively, μ is the friction of each cord against the actual pin, and α is the total of the angle changes of the two entwinements of each cord, in this case 360°.

The illustrated S-shaped cord path represents only an embodiment, because reversal of direction may be effected by means of a single pin around which the cord may be passed in an entwinement of 360°. This, however, involves the inconvenience that the cord when running off the pin will slide against itself, thereby being exposed to more wear than in the illustrated example with two entwinements of 180°.

It is apparent that the braking force may be controlled by choosing a larger number of pins, other angle changes of the cord entwinement round the individual pins and stronger or weaker springs. By these means the braking force is easily dimensioned so that the bottom bar may be safely retained in arbitrary positions. Experiments have shown that the embodiment illustrated in Fig. 3 allows the cords to stand far more than 10,000 raisings and drawings of the blind with no substantial wear and deterioration of the braking effect.

At the same time the cooperation of the frictional brake device with the springs 18, 18' and the

6

spring bias in the roller bar, not shown, entail that the braking force does not hamper the operation of the blind. At a pull downwards at the bottom bar 7 the cord tension between the bottom bar 7 and the springs 18, 18' suddenly increases due to the brake device, whereas the cords between the brake roller 7 and the fixture means 11, 11' slacken, thereby causing the braking effect to decline so that the blind may easily be drawn. When the blind is raised the full braking force from the brake device must incidentally be overcome but the raising movement is supported by the spring bias of the roller bar.

The cord inverting arrangement in the bottom bar may advantageously be provided in that the pins 14, 15 and 14', 15', respectively, are mounted in a common holder 19 design for being fixed in the bottom bar 7, as illustrated in Figs 4 and 5. In this holder the cord paths for the cords 9 and 10 are separated by a partition wall 20 and in contradiction to the schematical illustration in Fig. 3 the reversal of both cord paths is provided by means of two common pins 21 and 22 extending through the holder 19 on both sides of the partition wall 20.

The invention is not restricted to the illustrated design of the brake device with an arrangement of reversal for the cords, the braking force being achieved with other designs of the friction members acting on the cords.

If the parallel guidance of the bottom bar 7 is ensured in another way, a double cord arrangement is neither necessary, even though this must be supposed to allow the simplest design.

The applicability of the invention is not restricted to blinds for blackout shades but may include any form of roller blind with a constantly spring-biased blind for which it is desired to have the possibility of arresting in arbitrary positions.

P A T E N T C L A I M S

1. A roller blind, particularly for use as blackout shade, comprising a spring-biassed roller bar designed to be mounted at the top of a window opening and a blind rolled on the roller bar and having along its lateral edges guide members (3) guided in tracks (4) provided in guide rails (5, 6) disposed at both sides of the window opening, a bottom bar (7) for the blind (2) being likewise provided, at both ends, with guide means engaging guideways (8) in said guide rails (5,6), and being further controlled by means of a cord arrangement with a cord (9, 10) which from a fixture means (11, 11') at the bottom of one guide rail (5, 6) is passed through the part of said guide rail positioned beneath the bottom bar (7), the bottom bar (7) itself, and the part of the other guide rail (6, 5) positioned above the bottom bar (7), to a fixture means at the top of the other guide rail,
characterized in that a brake device for retaining the bottom bar (7) in an arbitrary position against the effect of said spring bias includes a friction member (14, 15, 14', 15') mounted in the bottom bar (7) and acting on the cord, a device (18, 18') for tightening the cord (9, 10) being provided in association with one of said fixture means.

2. A roller blind as claimed in claim 1,
characterized in that the friction member includes a reversing member for the cord, firmly mounted in the bottom bar (7).

3. A roller blind as claimed in claim 2,
characterized in that said reversing member comprises two pins (14, 15, 14', 15') disposed in the bottom bar and over which the cord (9, 10) is passed in S-shape.

4. A roller blind as claimed in claim 3,
characterized in that the two pins (14, 15, 14', 15') are provided in a common holder (19) to be mounted in the bottom bar (7).

5. A roller blind as claimed in any of the preceding claims, characterized in that said fixture means (11, 17, 11', 17') for the cord (9, 10) are provided in retaining means to be inserted in respective ends of
5 the two guide rails (5, 6).

6. A roller blind as claimed in claim 5, characterized in that the cord tightening member (17, 17') consists of a tension spring (18, 18') mounted in one of said fixture means (17, 17') and connected with
10 the actual cord end.

7. A roller blind as claimed in any of the preceding claims, in which the cord arrangement for ensuring parallel guidance of the bottom bar (7) in relation to the roller bar includes two cords (9, 10)
15 passed through the guide rails (5, 6) and the bottom bar (7) in reverse mounting, characterized in that said holder (19) as the friction member for both cords (9, 10) includes two common reversing pins (21, 22), and that the holder is pro-
20 vided with a partition wall (20) for separating the two cord paths.

1/2

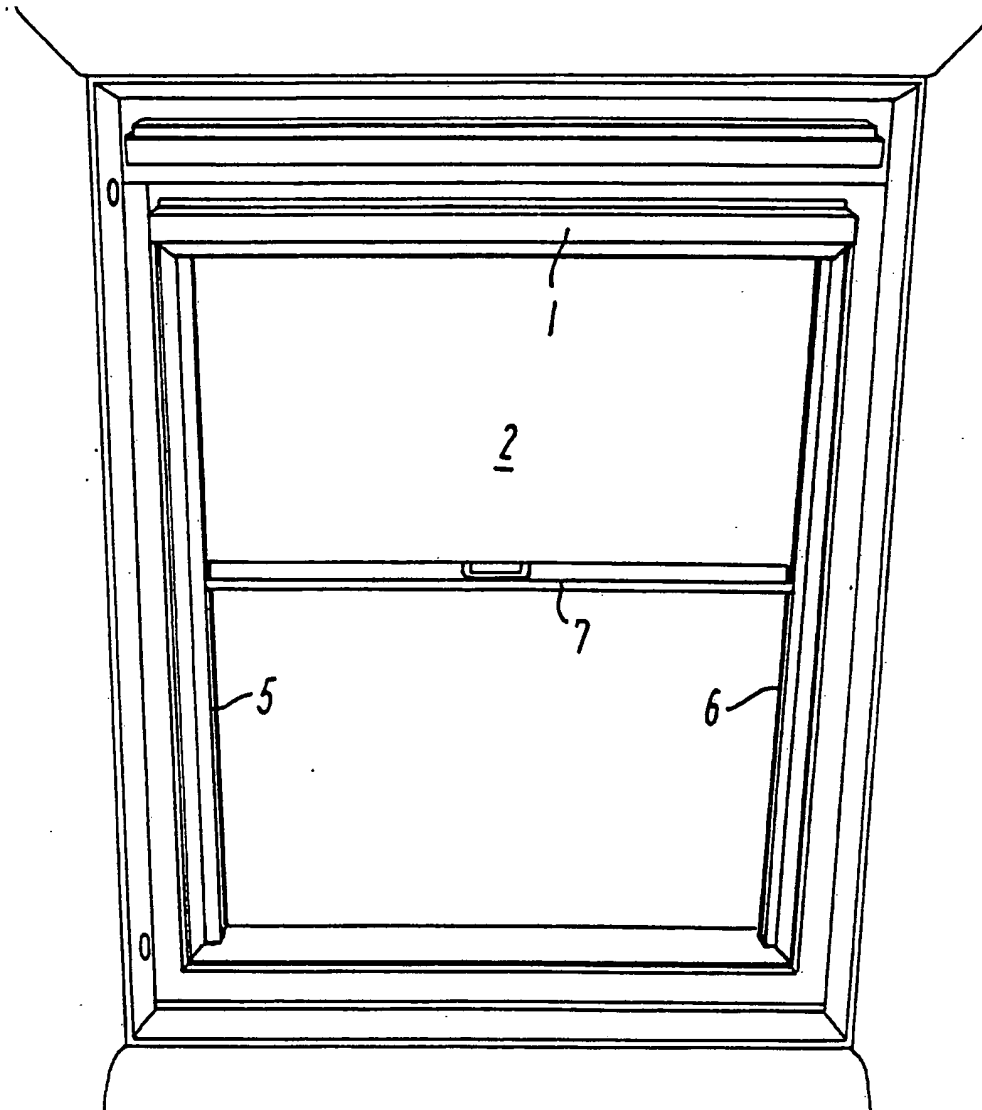
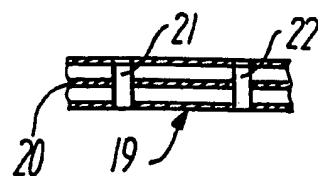
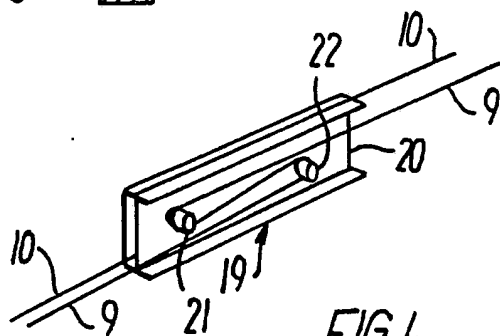
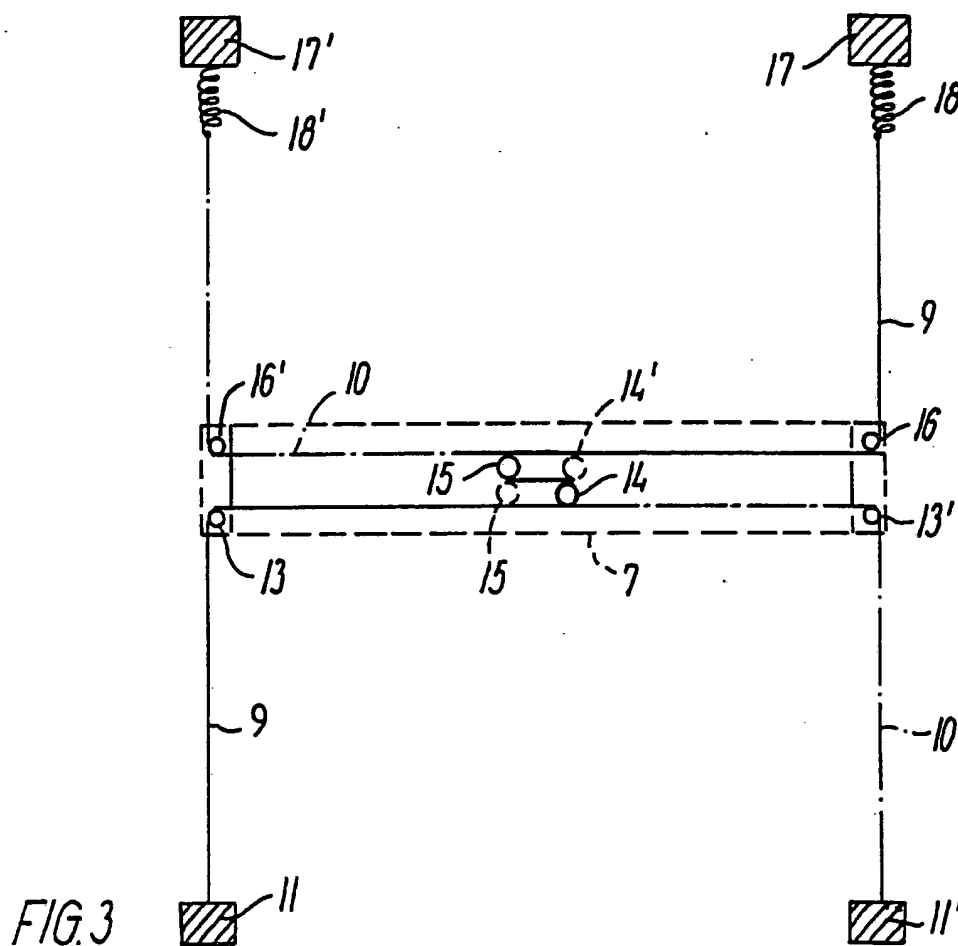
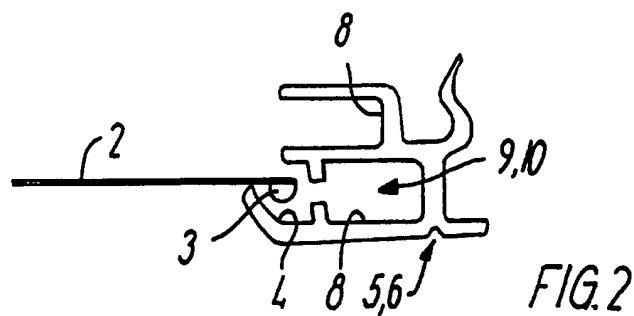


FIG. 1

2/2



INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 93/00090

A. CLASSIFICATION OF SUBJECT MATTER

IPC5: E06B 9/42, E06B 9/56

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC5: E06B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above.

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

ORBIT

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US, A, 785806 (C.L. HOPKINS), 28 March 1905 (28.03.05), page 2, column 1, line 21 - column 2, line 75 --	1
X	FR, A1, 2615240 (ETABLISSEMENTS FARNIER ET PENIN, SOCIETE ANONYME), 18 November 1988 (18.11.88), page 3, line 10 - page 4, line 11, figure 1 --	1
A	US, A, 794937 (C.L. HOPKINS), 18 July 1905 (18.07.05), page 1, column 2, line 93 - page 2, column 1; line 17 --	1



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

International application No.

PCT/DK 93/00090

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	FR, A1, 2642466 (LON JESNE ET AL), 3 August 1990 (03.08.90), figure 10 --	1
A	FR, A1, 2663675 (CROS STORE ZENITH), 27 December 1991 (27.12.91), figure 1 -- -----	1

INTERNATIONAL SEARCH REPORT
Information on patent family members

30/04/93

International application No.

PCT/DK 93/00090

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US-A- 785806	28/03/05	NONE	
FR-A1- 2615240	18/11/88	NONE	
US-A- 794937	18/07/05	NONE	
FR-A1- 2642466	03/08/90	NONE	
FR-A1- 2663675	27/12/91	NONE	